

*A multidimensional measurement approach and analysis of children's motivation for reading,
attributional style, and reading achievement*

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Child and Youth Studies

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ABSTRACT

A MULTIDIMENSIONAL MEASUREMENT APPROACH AND ANALYSIS OF CHILDREN'S MOTIVATION FOR READING, ATTRIBUTIONAL STYLE, AND READING ACHIEVEMENT

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The present study investigates the usefulness of a multi-method approach to the measurement of reading motivation and achievement. A sample of 127 elementary and middle-school children aged 10 to 14 responded to measures of motivation, attributions, and achievement both longitudinally and in a challenging reading context. Novel measures of motivation and attributions were constructed, validated, and utilized to examine the relationship between motivation, attributions, and achievement over a one-year period (Study I). The impact of classroom contexts and instructional practices was also explored through a study of the influence of topic interest and challenge on motivation, attributions, and persistence (Study II), as well as through interviews with children regarding motivation and reading in the classroom (Study III). Creation and validation of novel measures of motivation and attributions supported the use of a self-report measure of motivation in situation-specific contexts, and confirmed a three-factor structure of attributions for reading performance in both hypothetical and situation-specific contexts. A one-year follow up study of children's motivation and reading achievement demonstrated declines in all components of motivation beginning at age 10 through 12, and particularly strong decreases in motivation with the transition to middle school. Past perceived competence for reading predicted current achievement after controlling for past achievement, and showed the strongest relationships with reading-related skills in both elementary and middle school. Motivation and attributions were strongly related, and children with higher motivation

displayed more adaptive attributions for reading success and failure. In the context of a developmentally inappropriate challenging reading task, children's motivation for reading, especially in terms of perceived competence, was threatened. However, interest in the story buffered some of the negative impacts of challenge, sustaining children's motivation, adaptive attributions, and reading persistence. Finally, children's responses during interviews outlined several emotions, perceptions, and aspects of reading tasks and contexts that influence reading motivation and achievement. Findings revealed that children with comparable motivation and achievement profiles respond in a similar way to particular reading situations, such as excessive challenge, but also that motivation is dynamic and individualistic and can change over time and across contexts. Overall, the present study outlines the importance of motivation and adaptive attributions for reading success, and the necessity of integrating various methodologies to study the dynamic construct of achievement motivation.

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TABLE OF CONTENTS

ABSTRACT.....	ii
ACKNOWLEDGEMENTS.....	iv
TABLE OF CONTENTS.....	v
LIST OF TABLES AND FIGURES.....	vii
INTRODUCTION	8
A Multi-Theoretical Perspective of Children's Responses to Reading	9
A Multi-Methodological Evaluation of Children's Responses to Reading	12
Self-Report Approach to Motivation	14
Behavioural Approach to Motivation	16
Qualitative Approach to Motivation	17
Towards a Multi-Methodological Approach	19
Rationale	20
Overview of the Studies.....	22
STUDY I: RELATIONSHIP AMONG MOTIVATION, ATTRIBUTIONS, AND READING ACHIEVEMENT.....	24
Literature Review.....	24
Developmental Course of Motivation.....	24
Relationship among Motivation, Attributions, and Achievement	28
Method	35
Participants.....	35
Measures of Reading Achievement	36
Measures of Motivation	38
Measures of Attributional Style	40
Procedure	40
Results.....	41
Developmental Course of Motivation.....	41
Relationship among Motivation, Attributions, and Achievement	44
Discussion.....	48
Conclusion	54
STUDY II: TOPIC INTEREST PROTECTS MOTIVATION AND FOSTERS ADAPTIVE ATTRIBUTIONS DURING READING CHALLENGE	57
Method	64
Participants.....	64
Measures	65
Procedure	66
Results.....	68
The Role of Topic Interest on Motivation and Attributions	68
Persistence in a Challenging Reading Situation	71
Discussion.....	74
Conclusion	82
STUDY III: QUALITATIVE ANALYSIS OF CHILDREN'S PERCEPTIONS AND FEELINGS ABOUT READING AS A REFLECTION OF THEIR MOTIVATION.....	84
Method	88
Participants.....	88

Procedure and Analysis.....	89
Results and Discussion	91
Challenging Reading Context and Motivation	91
Topic and Individual Interest	93
Perceived Competence.....	97
Effort.....	100
External Validity of Keywords used in the IMI.....	102
Conclusion	106
CONCLUSION.....	110
REFERENCES	114
APPENDIX A.....	135
APPENDIX B	137
APPENDIX C	145

LIST OF TABLES AND FIGURES

Table 1. <i>Mean Change in Motivation over a One-Year Period by Age (N = 70)</i>	42
Figure 1. <i>Change in motivation over a one-year interval by age at time 1</i>	43
Table 2. <i>Correlations between Motivation and Reading-Related Skills in Elementary and Middle School Age Groups (N = 127)</i>	44
Table 3. <i>Correlations between Motivation and Post-Passage Motivation, Hypothetical Situation Attributions, and Post-Passage Attributions (N = 127)</i>	46
Table 4. <i>Participant Details for the Interesting and Non-Interesting Passage Conditions</i>	65
Table 5. <i>Motivation for Reading and Attributions for Failure Before and After Reading a Challenging Reading Passage</i>	69
Table 6. <i>Reading and Motivation Scores According to Passage Condition and Level of Persistence in the Reading Task</i>	73
Table 7. <i>Interview Participant Profiles</i>	89
Table 8. <i>Comparison of Keywords used in the IMI Subscales to Children's Interview Responses (N = 17)</i>	105
Table 9. <i>Varimax-Rotated Three-Factor Solution of the Post-Passage IMI</i>	136
Table 10. <i>Internal Consistency (Cronbach alpha Coefficient) for the Post-Passage IMI</i>	136
Table 11. <i>Varimax-Rotated Three-Factor Solution of the Hypothetical Situation Attribution Scale for Success Scenarios</i>	140
Table 12. <i>Internal Consistency (Cronbach alpha Coefficient) for the Hypothetical Situation Attribution Scale</i>	141
Table 13. <i>Varimax-Rotated Three-Factor Solution of the Finalized Hypothetical Situation Attribution Scale for Failure Scenarios</i>	142

Table 14. <i>Varimax-Rotated Four-Factor Solution of the Post-Passage Attribution Scale.....</i>	147
Table 15. <i>Varimax-Rotated Three-Factor Solution of the Finalized Post-Passage Attribution Scale.....</i>	148
Table 16. <i>Internal Consistency (Cronbach alpha Coefficient) for the Post-Passage Attributions Scale.....</i>	148

INTRODUCTION

In recent research on academic achievement and learning, affective factors such as motivation and attitudes towards learning have emerged as critical influences on achievement. It is clear that while students are learning, they are not only gaining knowledge but are also actively constructing beliefs about themselves as learners (Boekaerts, Otten, & Voeten, 2003). Motivation has emerged as a multifaceted construct that involves the interaction of multiple personal, social, and achievement outcomes (Linnenbrink & Pintrich, 2002b; Schunk, 1999), generating diverse profiles of motivation (Pintrich, 2003). However, a comprehensive portrait of motivation and an understanding of how motivation constructs work together and conflict remains necessary in order to fully understand motivation and its relationship with academic achievement (Murphy & Alexander, 2000).

As motivation is more powerfully associated with academic outcomes when measured at the school subject level (Wigfield, 1997), the present study addressed the relationship between motivation and achievement in the domain of reading. Reading ability and related skills are critical to children's ongoing academic performance in all domains (Chapman & Tunmer, 1995, 2003; Roeschl-Heils, Schneider, & van Kraayenoord, 2003). Researchers agree that reading is a motivated process, and although children may be skilled in reading, motivation is required to engage in reading, employ learned strategies and skills, and construct meaning from text (Guthrie & Wigfield, 1999; Lau & Chan, 2003; Watkins & Coffey, 2004). Due to the practical and educational importance of reading ability, this research involves motivation for reading and its relationship to reading achievement as a primary focus.

Research has found that motivation for reading decreases as children age (Eccles, Wigfield, Harold, & Blumenfeld, 1993; Harter, 1981; Marsh, 1989). However, the majority of

research has been cross-sectional, with few studies focusing on longitudinal relationships between motivation and achievement (e.g., Anderman & Midgley, 1998; Roeser, Midgley, & Urdan, 1996). This study integrates a longitudinal approach to examine the developmental course of motivation and the stability of the relationship between motivation and achievement for elementary and middle-school children with a range of motivation and achievement profiles.

A Multi-Theoretical Perspective of Children's Responses to Reading

Traditional approaches to the study of motivation typically reflect a single theoretical approach (Martin, 2007). For example, many current theories of achievement motivation, such as self-determination, cognitive evaluation, and expectancy-value theories, predominantly examine cognitive processes that influence motivation. Particularly in the case of a diverse, complex construct such as achievement motivation, a multidisciplinary approach that integrates various traditional approaches and perspectives is needed to enhance our understanding (Pintrich, 2003; Yeung, 2004).

Some researchers have moved towards a more comprehensive perspective, recognizing the diverse constructs that contribute to students' motivation and learning behaviour. Midgley and colleagues (1997) developed a multifaceted approach consisting of individual and contextual influences on motivation. Within their measurement of motivation, students report on multiple individual constructs, including achievement goal orientations and academic-related perceptions, beliefs, and strategies (i.e., academic efficacy, academic self-handicapping, self-presentation, relevance of school). This approach also incorporates students' perceptions of contextual influences on their motivation, such as perceptions of teacher goals, classroom goal structures, and parents, home life, and neighbourhood.

Other researchers have integrated a behavioural approach within the social-cognitive perspective of motivation. Pintrich and De Groot's (1990) cognitive approach to motivation and self-regulation connects motivational orientations (i.e., self-efficacy, intrinsic value, test anxiety) with a behavioural evaluation of self-regulated learning strategies. Martin (2007) also proposed a cognitive and behavioural framework of motivation and engagement, encompassing adaptive cognitive (i.e., self-efficacy) and behavioural (i.e., persistence) dimensions, and maladaptive cognitive (i.e., failure avoidance) and behavioural (i.e., disengagement) dimensions.

A comprehensive definition of motivation implies pre-decisional, self-directed movement towards a particular learning goal (Heckhausen & Kuhl, 1985; Pintrich, 2003). Within Rheinberg, Vollmeyer, and Rollet's (2000) framework, motivation affects the strength and quality of commitment towards learning goals. Pintrich (2003) specified five motivational generalizations regarding the cognitive constructs that motivate students towards academic goals: adaptive self-efficacy and competence beliefs; adaptive attributions and control beliefs; higher levels of interest and intrinsic motivation; higher levels of value; and goals. Snow and Jackson's (1993) taxonomy of conative constructs, consisting broadly of motivation and volition, also includes five categories: achievement motivation; self-regulation; interests and styles in learning; self-related constructs; and other-related constructs.

In this study, the term motivation will serve as an organizing concept, providing a theoretical link of three components of intrinsic motivation proposed by Ryan and Deci (2000): perceived effort for a subject area or task; individual and situational interest for reading, linked to Pintrich's (2003) *interest and intrinsic motivation*, and Snow and Jackson's (1993) *interests and styles in learning*; and perceived competence beliefs, related to Pintrich's (2003) *adaptive self-efficacy*, and Snow and Jackson's (1993) *self-related constructs*. These components of

motivation will be measured as a general and relatively stable *motivational orientation* towards reading (Rheinberg et al., 2000), and as a *motivational state* after a challenging reading task. In addition to perceived effort children's actual effort during a reading task will be measured as a motivational state with a behavioural measure of persistence. Rheinberg and colleagues (2000) discussed motivational states as the characteristics of motivation during a learning phase, which are more likely to change than general motivational orientations.

Attributions for reading performance will be considered as an additional dimension of motivation in this study, connecting to Pintrich's (2003) dimension of adaptive attributions. Attributions will be represented as the reported reasons for successful and failed performance on reading tasks (Weiner, 1986). Similar to the measurement of motivation, a general measure of attributions in hypothetical reading situations will represent children's *attributional orientation* towards reading performance outcomes, while the measure of attributions after a challenging reading task will be examined as their *attributional state* in this context. Attributions can mediate the relationship between motivational orientations and learning through changing motivational states, such as a decreased feeling of self-efficacy if a learner attributes failure to poor ability (Pintrich, 2000; Rheinberg et al., 2000).

Children's verbally expressed emotional reactions after a reading task and in different reading contexts will also be considered, allowing for a better understanding of the affective aspects of motivation and the processes by which emotions influence motivation and learning outcomes. Pintrich and De Groot (1990) proposed an affective component, consisting of emotional reactions to a task, as one of three motivational components linked to self-regulated learning. Snow and Jackson (1993) also included an affective factor in their framework of conative constructs, illustrating the relationship between affect and the motivation and volition

constructs described above. Due to the importance of both individual and situational factors in learning contexts, the influence of situational characteristics in a challenging reading task will also be considered.

A Multi-Methodological Evaluation of Children's Responses to Reading

Motivation consists of the biological, physiological, social, and cognitive forces that direct behaviour. As a consequence of the focus of motivational theories on cognitive constructs, methodology has also been driven by a predominant focus on the cognitive, intrapsychological aspects, discounting the importance of additional personal and contextual factors in the study of motivation. Despite efforts of various approaches and methodologies to encapsulate the construct of motivation, a single approach is unable to capture its complexities. Resulting from this narrow focus and the absence of appropriate measures, the study of motivation remains theoretically fragmented and in the beginning stages of development (Chapman & Tunmer, 1995; Henk & McKenna, 2004; Murphy & Alexander, 2000; Wigfield, Guthrie, Tonks, & Perencevich, 2004).

To advance our understanding of motivation and overcome the limitations of the current dominant method, the usefulness of other theoretical and methodological approaches to this construct should be determined (Hickey, 1997). Limited discussion has begun from within various approaches on the value of incorporating alternative measurement strategies (Byrne, 1996; Dörnyei, 2000; Henk & McKenna, 2004). Alternative approaches deviate in how motivation is defined and theorized, the processes believed to mediate the relationship between motivation and actual behaviour, and the measurement tools and tasks designed to assess motivational states.

The measurement of motivation should include a multiplicity of experimental designs and methodologies to assess both cognitive-individual and social-cultural influences through a

contextual, rather than intrapsychological, lens (Pintrich, 2003). In the evaluation of individual influences, Ainslie (1992) suggests the measurement of an attitudinal or emotional orientation component typically assessed through self-report or qualitative methodologies, and a task-oriented component assessing activity engagement and involvement, corresponding to behavioural-choice methodologies.

An initial review of self-report methodology in achievement motivation research and its limitations provides a rationale for the subsequent examination of behavioural and qualitative approaches to the measurement of motivation. Discussion of each approach includes a definition of the theoretical conceptualization of motivation and the motivational tools and tasks utilized. It is important to note that although this review is extensive, it is not exhaustive or entirely comprehensive, especially in the examination of self-report measures that are numerous in quantity and diverse in construction. While the review of self-report measures is exclusive to measures of achievement motivation, the examination of alternative approaches encompasses a wider range of topic areas due to the limited use of these measures in educational motivation research to date. However, the measurement tools and approaches reviewed are applicable to and compatible with the study of achievement motivation. Representative exemplars from each of the different approaches have been included to highlight potential cross-pollination of methods and potentially derive novel methods for motivation measurement.

Through advancing an understanding of the measurement and conceptualization of motivation, it is evident that research in this field must move towards a more integrated, multi-method approach to motivation. This review provides support for the integration of multiple methodological and theoretical approaches within this particular study of children's motivation for reading.

Self-Report Approach to Motivation

The popularity of self-report measures signifies that strengths must be evident in using this method to measure aspects of motivational orientations. Individuals are a valuable source of information regarding their motivation towards a task, such as reading (Crombach, Boekaerts, & Voeten, 2003). The psychometric benefits of well-constructed self-report measures are high internal consistency and specificity in construct definition (Marsh, Craven, Hinkley, & Debus, 2003). Furthermore, evidence linking reading achievement and self-perceptions of competence and motivation was initially found using self-report methodology (Chapman & Tunmer, 1995). Self-reports are compatible with large-sample research studies, are easy and quick to administer, and have advantageous scaling properties suitable for the use of inferential statistics, allowing for straightforward statistical analysis and standardization (Elliott, 2004).

On the other hand, several widely recognized weaknesses of self-reports warrant attention to improved measurement and methodology (Elliott, 2004; Keith & Bracken, 1996). Few scales of motivation are thoroughly developed, extensively used, or published, resulting in a lack of validation information about the effectiveness of the scales and an inability to compare results across studies using different measures (Bear, Minke, & Manning, 2002; Keith & Bracken, 1996). Developmental weaknesses of self-report methodology include developmentally unsuitable vocabulary and item and response formats for younger children and disregard for developmental differences in self-concept and motivation (Chapman & Tunmer, 1995; Elliott, 2004; Nicholls, 1978). Construct weaknesses are evident in the overuse of measures that oversimplify the complexities of motivation, and a lack of effort to understand conceptual difficulties (Elliott, 2004). Furthermore, existing self-report measures of motivation are often highly general, though current theory indicates the context-specificity of motivational processes

(Murphy & Alexander, 2000). Measurement weaknesses are also apparent in scale construction, as the measurement of motivation is often confounded with other variables, such as ability and attention. Additional problems with validity stem from the absence of testing of children's experiences in authentic situations (Poskiparta, Niemi, Lepola, Ahtola, & Laine, 2003; Veermans & Tapola, 2004) and the use of non-published self-report measures, rather than psychometrically and theoretically validated instrumentation.

Thus, several challenges and weaknesses in the exclusive use of self-report measures for the study of motivation warrant consideration of alternative approaches. Since the limitations of self-report are highlighted when additional methods are used, a multi-method approach would contribute to an increased understanding of the complexities of motivation (Elliott, 2004). Although multi-method approaches are often time-consuming, difficult to construct, and may appear to be deficient in objectivity and precision, the study of motivation could benefit from a significant transformation.

Attributional approach. Inclusion of perceptions of the self has dominated motivation research and measures, but little attention has been placed on self-directed responses and emotional reactions (Weiner, 1990). Attributional measures assess children's beliefs about the causes for success or failure, such as effort, luck, task difficulty, unfairness, and ability. Weiner's (1986) attributional theory demonstrates the interaction between attributions and subsequent learning outcomes and motivational states. Although many attribution questionnaires are general, attributions are subject-specific and should be examined specific to the area being studied (Boekaerts et al., 2003; Marsh, Walker, & Debus, 1991). In most measures, children choose or rate an attributional explanation in hypothetical success and failure situations (e.g., "You got all the questions right on the math test. Why did this happen?"). Cartoons have also been used

instead of vignettes (Nurmi, 1995; Nurmi, Aunola, Salmela-Aro, & Lindroos, 2003), which may enhance understanding for younger children. The use of Likert scales can be problematic as participants may rate attributions in the middle, rather than extremes, providing little information about their attributions and motivation (Yee, Pierce, Ptacek, & Modzelseky, 2003).

Attributions can also be measured in actual scenarios or tasks (i.e., performance on a test) through recording children's spontaneous verbalizations regarding their attribution and affect (e.g., Elliott & Dweck, 1988). This approach allows children to actively respond to a situation, rather than select from a created list of causal dimensions (Duda & Allison, 1989). Attributions can also be measured after a task is introduced or after completion of a task (Boekaerts et al., 2003). Measures for academic scenarios should include effort attributions, as effort is the most frequent attribution in learning contexts (Boekaerts et al., 2003).

In this way, attribution methods can involve the strengths of self-report methodology, while integrating affective responses during or after a specific experience or task. The integration of attributional theory in the study of motivation can add to existing knowledge of the processes involved in children's motivational states. Although attributional approaches commonly measure how motivation is initiated by an outcome perception (Weiner, 1986), it is also crucial to consider attributions as a motivational orientation that is connected to the individual's perceptions of the self and the particular task or subject (i.e., reading). Therefore, the relationship between attributions and self-reported motivational orientations and states, and the impact on academic achievement, can be analyzed through the addition of this approach.

Behavioural Approach to Motivation

The behavioural approach to the study of motivation is based on the concept that overt behaviours and reactions before, during, and after a task reflect an individual's motivational

state, and that context-specific behavioural measures of motivation in authentic, natural settings produce more valid measures of this construct (Hickey, 1997; Hillman, Rosengren, & Smith, 2004; Jarvenoja & Jarvela, 2005; Poskiparta et al., 2003). Motivation is defined within the behavioural approach according to the objective presence or absence of specific behaviours and emotions. Intrinsic motivation is often measured through behaviours, such as the choice to pursue and engage in tasks, and attending to and investigating a particular task, which may be due to feelings of arousal or drive (Henderlong & Paris, 1996; Reeve & Nix, 1997).

Advantages over self-report include the study of motivation in natural contexts and learning situations (Henderlong & Paris, 1996), and measuring the affective responses, rather than simply cognitive or self-evaluative orientations, to motivational stimuli and conditions. Behaviours such as involvement and engagement are especially important for success in reading, and therefore, are a significant aspect of motivation to measure. In addition, behavioural measures tend to have increased context-specificity and face validity when compared to self-report measures. However, if methodology is solely observational, researchers are often unable to assess how the activity influences children's emotions or self-concept, resulting in uncertainty in determining which behaviours are reflective of motivation (Henderlong & Paris, 1996). Since cognitive processes are thought to be essential in determining behaviour, the measurement of motivation should be concerned with both cognitive and behavioural processes (Weiner, 1986).

Qualitative Approach to Motivation

The qualitative measurement approach emphasizes individuals' subjective experiences, meanings, and reflective perceptions of their motivational states (Shedivy, 2004; Yeung, 2004). It is believed that qualitative measures provide more depth to the evaluation of motivation because they are based on students' own constructions of experience and emphasize idiographic

patterns of motivation (Shedivy, 2004), rather than the description of broad patterns or correlations across many students. This knowledge of students' own descriptions and interpretations of their motivation also promotes an understanding of individual differences in motivation (Perry, VandeKamp, Mercer, & Nordby, 2002; Shedivy, 2004; Yeung, 2004).

In this view, motivation is influenced by environmental, historical, temporal, and individual factors, illustrating that motivation is not a stable emotional or mental trait, but is subject to change over time and across contexts (Dörnyei, 2000; Yeung, 2004). This is especially relevant for the study of motivation in the classroom, as motivation must be maintained over time at various scales (e.g., lesson, period, semester, year) and shifting learning contexts (e.g., peers, teachers, learning materials, rewards and other contingencies). In this concern for context, a qualitative approach highlights the multi-faceted and interconnected nature of motivational states (Yeung, 2004). Motivation is the result of conscious cognitive processes, and the study of motivation must include the meaning of actions and experiences which are based on subjective perceptions of a particular context (Weiner, 1986). It is critical to examine children's reflections on their motivational states and academic performance (Weiner, 1990; Yee et al., 2003) in order to recognize how motivation influences children's learning. This is especially true in the context of schools, where goals for achievement and learning and definitions of success and failure may be quite different from personal goals and expectancies (Duda & Allison, 1989).

Advantages of a qualitative approach over self-report include the ability to interpret and integrate multiple factors that influence motivation, recognizing motivation as a process rather than an orientation that can be measured by a questionnaire at a single point in time (Dörnyei, 2000). This approach identifies specific and general motives for behaviour and different stages of motivation through a microanalysis of various factors, processes, circumstances, and challenges

that determine motivation and behaviour (Dörnyei, 2000). Qualitative methods also introduce a wider range of meanings for human motivation in natural learning contexts. This approach adds an authentic element to the study of motivation, unachievable with self-report methods, through a better understanding of what children believe influences their motivation, similarities and differences between children's behaviours and their beliefs about their motivation, and how classroom contexts are connected to students' motivation (Perry et al., 2002).

Towards a Multi-Methodological Approach

In reviewing the measurement of motivation, it is evident that each approach provides strengths to the study of motivation that resolve particular limitations of self-report methodology. However, the challenge lies in the integration of alternative measurement approaches. Ideally, measures of motivation will reflect multiple theoretical perspectives and measurement techniques to capture the complexities of students' achievement motivation profiles.

As motivation is a complex construct, several cognitive and affective mediators of the motivation-performance relationship should be measured to understand how an individual's motivation translates into actual behaviour and performance (Brunstein & Maier, 2005). Several researchers have concluded that self-report and behavioural measures of motivation are correlated, and independently contribute to this construct (Frijters, 2004; Reeve & Cole, 1987; Reeve & Nix, 1997). Jarvenoja and Jarvela (2005) and Veermans and Tapola (2004) emphasized the importance of a profile-oriented approach that combines individual and situational measures to understand classroom motivation in natural settings. However, caution must be taken when integrating these methods as they may be incompatible on some dimensions or tap different aspects of motivation. Thus, in integrating methods of motivation, researchers must be attentive to the dimensions of motivation measured by each instrument and the validity of these measures.

Given this background, the following studies were designed as a multi-methodological evaluation of children's motivation for reading, broadening the measurement of motivation to include methodologies theoretically linked to the construct of motivation, but ignored in implementation. The studies integrate the reliability, content validity, and desirable scaling properties for statistical analysis of self-report measures, the context-specificity and face- and construct-validity of behavioural methods, and the authentic and personally meaningful measurement strengths of qualitative approaches to motivation. In this way, motivational orientations and states towards reading can be assessed through attributions and self-report, while examination of behaviours and interview responses can contribute to an understanding of the connection between motivational orientations and states, situational and task characteristics, and achievement outcomes.

Rationale

As discussed, a multi-theoretical and multi-methodological approach will enhance our current understanding of the complexities and dynamic nature of achievement motivation, contributing to theory and research in this field. The use of behavioural and qualitative methods in the study of motivation has long been suggested, but rarely implemented. Compared to cross-sectional designs, a longitudinal examination of the changes in motivation will provide a more reliable understanding of the trajectory of motivation and its relationship to achievement at different ages. In addition, this research utilizes both general and situation-specific measures of motivation in the domain of reading, contributing to knowledge regarding the stability of motivation across particular contexts (Jarvenoja & Jarvela, 2005).

The multi-methodological design affords a number of potential advances to theory and research in the field of motivation. With the examination of children's motivation for reading in

classroom contexts and under particular instructional conditions, this research can provide practical significance by way of informative findings for educators. Concurrent with the present focus within Ontario schools on literacy, the Expert Panels on Early Reading and Literacy (2003; 2004) reported that motivation is one of the skills and strategies readers need to succeed, and that teachers have a pivotal role in enhancing children's motivation to read. Motivation to read and strategies to enhance motivation were emphasized in the report for early reading, but were comparatively ignored within the report for Grades 4 through 6, other than the importance of appealing to student's interests and specific needs. As motivation tends to decline with age (Gottfried, Fleming, & Gottfried, 2001; Lepper, Corpus, & Iyengar, 2005; Meece & Miller, 2001), knowledge of motivation strategies is increasingly important in the later elementary and middle-school grades. Therefore, although the importance of motivation in literacy education has been recognized, the pedagogical strategies to motivate students that are diverse in their individual needs, abilities, and motivational profiles remain unclear, and have yet to benefit from research on motivation (Henk & McKenna, 2004).

A more comprehensive understanding of the relationship between achievement and several aspects of motivation can contribute to the effective implementation of evidence- and research-based reading instruction in the classroom. Knowledge about motivation for reading can facilitate effective modifications of learning contexts to encourage personal motivation amongst children, especially since early motivation and academic experiences relate to later motivation and success (Gottfried, 1990). This knowledge can also be used to create intervention programs for teachers to apply principles of motivation in the classroom to increase students' motivation, and in turn, their academic achievement and overall enjoyment of learning.

In the field of motivation, questions remain about the various factors of motivation and which components change developmentally, especially in connection to academic achievement. Based on a review of motivational research and the relationship between motivation and reading achievement, the overall aim was to address several gaps in knowledge and research technology through the following linked objectives:

- 1.) To integrate multiple methods (self-report, behavioural, qualitative) of examining children's motivation for reading, including the design and validation of novel measures of attributions for reading;
- 2.) To characterize the degree of stability or change in multiple components of motivation for reading over a one-year period, as well as before and after a challenging reading task;
- 3.) To examine the relationship among several components of motivation, attributions, and achievement in reading both generally and specific to a challenging reading task;
- 4.) To develop a better understanding of children's emotions relating to reading and reading instruction and how children verbalize their motivation through a qualitative approach.

Overview of the Studies

As research in the field of motivation and academic achievement is complex, it is important to expand our knowledge in order to respond to outstanding research-based and education-related questions. The construction of a multi-methodological approach provides an innovative analysis to the study of motivational orientations and academic achievement in reading. Knowledge regarding the developmental course of motivation, specifically in the areas of interest, perceived competence, perceived effort, and attributions, has vital implications for pedagogical strategies in literacy education. In terms of the relationship between motivation and

academic achievement, it is not only important to consider which areas of motivation impact reading achievement, but also if these relationships change as children age.

The present study has been divided into three studies signifying the multi-methodological approach. In Study I, a longitudinal analysis of motivational orientations and reading achievement is the primary focus, in addition to an examination of the relationships between achievement, motivation, and attributions. Study II involves an experimental design to better understand the impact of topic interest and challenge on children's motivation and attributions during a challenging reading task. This study considers changes in motivational states resulting from the situational characteristics of challenge and interest level. Finally, Study III integrates qualitative methodology to uncover children's descriptions of their attitudes and emotional reactions with reading in the classroom as a reflection of their motivation, as well as an analysis of the external validity of the Intrinsic Motivation Inventory (IMI) subscales. Throughout these studies, the construction and validation of three separate measures of motivation and attributions are introduced.

STUDY I: RELATIONSHIP AMONG MOTIVATION, ATTRIBUTIONS, AND READING ACHIEVEMENT

This study was designed to examine motivational orientations, general and situation-specific attributions, and reading-related skills. An analysis of the relationships among these components aids in understanding how these variables are related in the domain of reading. Furthermore, the comparison of general motivational orientations and attributions to situation-specific motivation states and attributions provides evidence of the stability of these constructs. Within this study, patterns in the relationship between children's motivational orientations and reading achievement over a one-year period are also considered. The following review focuses on research on the developmental course of motivation in the areas of interest, perceived competence, and perceived effort, and the relationships among motivation, attributions, and achievement.

Literature Review

Developmental Course of Motivation

Pintrich (2003) stated that research on how motivation changes and develops over time is a necessary direction for this field. Overall, research has shown a linear decline in motivation toward academics in the elementary years (Gottfried, Fleming, & Gottfried, 2001; Lepper, Corpus, & Iyengar, 2005; Meece & Miller, 2001), and during the transition to middle school (Anderman & Anderman, 1999; Eccles et al., 1989; 1993; Lepper et al., 2005; Roeser & Eccles, 1998; Roeser et al., 1998). This decline has been attributed to the academic environment (Anderman & Midgley, 1998; Meece & Miller, 2001), social environment (Anderman & Anderman, 1999), and home environment (Gottfried et al., 2001). The objective of this study was to better understand the trajectory of several components of motivation.

Declines in motivation are subject-specific and domain-specific measures tend to be more predictive of academic outcomes (Eccles et al., 1993). The present study employs a reading-specific measure of motivation to track the development of motivation across the elementary and middle school grades. There has been a lack of acknowledgement of the multifaceted nature of motivation, especially for reading, in current research (Baker & Scher, 2002). Thus, the developmental course of several components of motivation for reading are analyzed, including perceived competence, interest, and perceived effort. These variables, in addition to attributions, were selected because they have been considered as significant influences in theories of achievement motivation (Eccles & Wigfield, 1995).

Components of achievement motivation are correlated and interdependent (Murphy & Alexander, 2000). Those with positive perceived competence of their abilities tend to have higher interest (Eccles & Wigfield, 1995; Roeschl-Heils et al., 2003; Wigfield et al., 1997; 2004) and are more likely to increase effort and persistence, even on difficult tasks (Linnenbrink & Pintrich, 2003). Eccles and Wigfield (1995) concluded that perceived effort is negatively related to both interest and perceived ability, as students are less likely to believe they are competent and enjoy an activity when it is difficult or requires more effort. However, those with high perceived competence also perceive that they require less effort to complete a task (Brookhart & DeVoge, 1999). Low perceived competence has also been associated with decreased effort (Jinks & Morgan, 1999). A more complete awareness of the interactions among these variables will aid in understanding how motivational orientations impact the achievement outcomes of children with a range of ability and motivation profiles (Meltzer, Katzir-Cohen, Miller, & Roditi, 2001).

Perceived competence. In research to date, several terms, including self-concept, self-perceptions, and self-efficacy have been used to describe the motivational orientation of

perceived self-esteem toward academic subjects (Meltzer, Katzir, Miller, Reddy, & Roditi, 2004). Theories of achievement motivation, including self-efficacy theory, attribution theory, expectancy-value theory, and self-determination theory, recognize how ability self-concepts and perceptions of competence impact levels of motivation and subsequent achievement behaviour (Bandura, 1993; Deci, Vallerand, Pelletier, & Ryan, 1991; Eccles et al., 1993; Gottfried, 1990; Gottfried et al., 2001). A positive perception of academic ability is related to higher intrinsic motivation and increased academic achievement due to enhanced interest and effort (Bouffard, Marcoux, Vezeau, & Bordeleau, 2003; Gottfried, 1990; Roeser et al., 1996; Wigfield, Eccles, Mac Iver, Reuman, & Midgley, 1991). In the case of reading, it can be expected that children with positive competence perceptions will be more likely to engage in reading (Wigfield & Guthrie, 1997).

Research has found declines in perceived competence for reading during elementary and middle school (Bouffard et al., 2003; Eccles et al., 1993; Wigfield et al., 1991; 1997), which has been attributed partially to young children's overly positive perceptions of competence (Harter & Pike, 1984; Stipek & Mac Iver, 1989). However, research showing stability in competence perceptions in the early elementary years suggests that young children may not have overly positive perceptions (Chan, 1994; Chapman & Tunmer, 1995). This decline in perceived competence for reading and overall academics is stronger for low-achieving learners (Chapman & Tunmer, 1995; Roeschl-Heils et al., 2003).

Interest. Theories of achievement motivation, such as expectancy-value theory and self-determination theory, have illustrated that children's task-values and interest in school are related to intrinsic motivation and academic achievement, having an extensive impact on learning over time (Alexander & Jetton, 1996; Deci et al., 1991; Eccles et al., 1989; Hidi, 2001; Wigfield et al.,

1991). Beginning readers often have high interest in reading (Baker & Scher, 2002), and while some research has found that task values and interest in reading remain fairly stable and may increase (Eccles et al., 1989; Wigfield et al., 1991), research confirming a linear decline in interest in reading and increasingly negative attitudes towards reading in the elementary years is more common (Bouffard et al., 2003; Chapman & Tunmer, 1995; Eccles et al., 1993; Wigfield et al., 1997; Wigfield & Guthrie, 1997). Chapman and Tunmer (1995) proposed that this decline may occur due to children's increasing ability to distinguish between feelings of competence and actual interest and enjoyment in reading.

Perceived effort. Motivation is responsible for persistence and expended effort with a task (Dörnyei, 2000). Due to the importance that teachers and parents place on effort, young children believe effort to be one of the key indicators of academic competence, and that exerting effort will lead to increased ability (Nicholls, 1978; Stipek & Mac Iver, 1989). Young children do not understand the inverse relationship between effort and ability, perceiving themselves as less competent when required to work harder (Folmer et al., 2008; Nicholls, 1978; Stipek & Mac Iver, 1989). Meece and Miller (2001) found a decline in task-mastery goals for reading between Grades 3 and 4, although this increased between Grade 4 and 5. With increasing skills, normally developing children may report lower perceived effort since they would require less effort to experience success in reading. Overall, Meltzer and colleagues (2001) concluded that students in elementary and middle school overestimate their effort in academics, and often perceive their effort as above-average to superior.

This study aims to add to the growing research on the developmental course of motivation through the examination of several components of motivation across the elementary and middle-school grades over a one-year period. With increasing evidence of declines in

motivation for reading, research is needed to understand motivation across the school years in hopes of providing suggestions to promote academic success, especially for those with lower motivation who may be at a disadvantage for long-term academic performance (Gottfried et al., 2001; Otis, Grouzet, & Pelletier, 2005). Declines in motivation have been reported to coincide with educational consequences, including a decrease in academic achievement.

Relationship among Motivation, Attributions, and Achievement

With research indicating the significance of motivation in education and literacy, a focus on the relationship between motivation and academic achievement has ensued (Pintrich, Anderman, & Klobucar, 1994). The relationship between motivation and achievement remains strong and stable through the elementary and middle school grades, with motivation having both direct and indirect effects on academic performance (Chan, 1994; DiPerna, Volpe, & Elliott, 2005; Gottfried, 1990; Lepper et al., 2005; Shell, Colvin, & Bruning, 1995; Singh, Granville, & Dika, 2002). Understanding the relationship between motivation and academic achievement, especially in young children, can aid in recognizing the implications for current and future academic success (Gottfried, 1990).

Motivation is positively correlated with reading achievement and comprehension in the elementary and middle school grades (Chan, 1994; DiPerna et al., 2005; Gottfried, 1990; Guthrie, Wigfield, Metsala, & Cox, 1999; Pintrich et al., 1994; Shell et al., 1995). Gottfried (1990) recognized that reading motivation becomes a distinct area in relation to achievement by age seven, and found a strong correlation between early motivation for reading and later achievement. Wigfield, Guthrie, and colleagues (Guthrie et al., 1999; Wigfield et al., 1997) determined that children's motivation was the strongest predictor of reading amount amongst the variables of past achievement, prior knowledge, and self-efficacy, and that reading amount had a

direct correlation with reading achievement. Guthrie, Hoa, and colleagues (2007) found that motivation could explain 22% of growth in reading comprehension over time. The relationship between reading motivation and achievement is bidirectional (Morgan & Fuchs, 2007). Highly motivated children increase their reading over time (Wigfield & Guthrie, 1997), while reading achievement also impacts motivation for reading (Lau & Chan, 2003). Particularly in terms of children's competence beliefs, reading motivation and reading achievement predict each other over time (Morgan & Fuchs, 2007).

Perceived competence. Several researchers have noted the important contribution of perceived competence to motivation and behaviour, and as a result, success or failure in school (see Marsh & colleagues, 1991; 1992; Schunk & Pajares, 2005). In fact, Schunk and Pajares (2005) stated that “many differences in achievement can be better explained by students’ perceptions of their academic capabilities than by constructs often thought to be the key determinants of achievement” (p. 94). Deci and colleagues’ (1991) self-determination theory and the proposed model of Forter, Vallerand, and Guay (1995) highlight that perceived competence influences academic motivation, which then directly impacts academic performance. Similarly, Bandura’s (1993) self-efficacy theory correlates achievement, performance, and motivation with perceptions of competence and ability. Thus, those with positive perceptions of competence develop higher motivation for academics, resulting in increases in academic achievement (Forter et al., 1995). Researchers have determined that there is no relationship between academic self-concept and academic achievement with young children (e.g., Nicholls, 1978), with the understanding that correlations between perceived competence and achievement begin approximately in third grade. Chapman and Tunmer (1995; 2003) suggested that the relationship between perceived competence and reading achievement becomes significant between Grades 3

and 5, due to the time it takes to stabilize reading achievement and the inaccurate perceptions of competence of young readers.

Academic performance and academic self-concept have a reciprocal relationship; academic self-concept influences grades, and higher achievement also increases self-concept (Swalander & Taube, 2007; Zsolnai, 2002). Low-achieving students tend to have lower perceived competence for academics when compared to normally developing students throughout elementary and middle school (Chan, 1994; Margolis & McCabe, 2004; McClendon & Wigfield, 1998; Shell et al., 1995; Walker, 2003; Zeleke, 2004). Low perceived competence may be a result of frequent failure and discouragement, which initiates learned helplessness and subsequent decreases in perceived competence due to the belief that one lacks ability (Bear et al., 2002; Chan, 1994; Henk & Melnick, 1995; Walker, 2003).

In the context of reading, several researchers have found that perceived competence for reading is significantly related to reading achievement in elementary and middle school children (Bouffard et al., 2003; Chan, 1994; Pintrich et al., 1994; Roeschl-Heils et al., 2003; Shell et al., 1995; Swalander & Taube, 2007; Wigfield & Guthrie, 1997). Academic self-concept is positively correlated with academic achievement, via effects on motivation, even when prior achievement is controlled (Roeser et al., 1996). Children with poor reading self-concepts often have poorer word recognition and comprehension skills (Chapman & Tunmer, 2003). Perceptions of competence relate to reading achievement and skills through increased interest and engagement in reading, additional effort employed during reading, and persistence with comprehension (Guthrie, Hoa, et al., 2007; Henk & Melnick, 1995; Linnenbrink & Pintrich, 2003; Walker, 2003; Wigfield et al., 1997; 2004). Research has suggested that reading self-concept is influenced by early success and failure experiences with reading, as reading abilities

in the early years predict perceived competence for reading in later years (Chapman & Tunmer, 1995; 2003; Swalander & Taube, 2007).

Interest. Interest in academics is a critical aspect of intrinsic motivation and enhances learning and academic achievement (Cordova & Lepper, 1996; Eccles & Wigfield, 2002; Gottfried, 1990; Hidi, 2001; Linnenbrink & Pintrich, 2002b). Interest in reading contributes to reading performance and achievement (Chapman & Tunmer, 1995; 2003; Linnenbrink & Pintrich, 2002b) through comprehension and recall, attention, engagement, persistence, and increases in the amount and breadth of reading (Alexander & Jetton, 1996; Baker, 2003; Cordova & Lepper, 1996; Guthrie, Hoa, et al., 2007; Henk & Melnick, 1995; Hidi, 2001; Roeschl-Heils et al., 2003; Walker, 2003; Wigfield & Guthrie, 1997; Wigfield et al., 2004).

Declines in interest, particularly in middle school, are related to poorer academic performance (Roeser & Eccles, 1998). Children that are disinterested in reading often avoid reading or are not deeply engaged, which may result in negative effects on achievement (Henk & Melnick, 1995). Poor readers are often characterized by lower intrinsic motivation and interest in reading in comparison to good readers, which may be due to a lack of desire to learn as a result of a history of failure (Chan, 1994; Lau & Chan, 2003; McClendon & Wigfield, 1998; Shell et al., 1995; Sideridis, 1992). Baker (2003) recognized that most children show interest in beginning to read; however, children that experience difficulties develop negative self-concepts of their reading abilities, causing a decline in motivation, interest, and amount of reading. Thus, early successful reading experiences may be associated with subsequent increased interest for reading.

Perceived effort. The expectancy-value model (see Eccles & Wigfield, 2002) illustrates a relationship between the task-value of relative cost, which includes the perceived effort required

for the task, and achievement-related choices and performance. Several researchers have found that students at all levels and grades, from preschool until early high school, perceive effort as the most significant predictor of academic achievement (Meltzer et al., 2001; Shell et al., 1995). Meltzer and colleagues (2001) concluded that children were correct in their presumptions of the importance of effort, with perceived effort significantly predicting academic achievement in several domains, including reading. The relationship between perceived effort and achievement changes with age, as older children tend to perceive ability as more important than effort to their academic achievement (Henk & Melnick, 1995). Some research has also found a negative correlation between effort and reading achievement (Sullivan, Tobias, & McDonough, 2006). Normally developing children may be able to succeed and attain average or above-average achievement in reading with little effort because they have developed the necessary skills.

The relationship between perceived effort and academic achievement has been attributed to various causes. Yee and colleagues (2003) argue that investment in performance results in motivation to succeed, and therefore, increased effort. Meltzer, Katzir, and colleagues (2004) found the positive relationship between perceived effort and achievement to be mediated by strategy use. On the other hand, Poskiparta and colleagues (2003) and Sideridis (1992) concluded that task difficulty was the mediating factor; those struggling with language exhibited weaker intentions to contribute more effort or work harder to improve their grades. High levels of task-avoidance and an overall lack of effort predict low academic achievement and subsequent decreases in effort, creating a cumulative cycle of task-avoidance, poorer achievement, and lower academic satisfaction (Nurmi et al., 2003). It has also been found that low-achieving children often overestimate their effort, although these perceptions are consistently below the ratings of average- and high-achievers (McClendon & Wigfield, 1998; Meltzer et al., 2001).

Attributional style. Attributional theory assesses motivational orientations and states for academic tasks based on students' reasons for success or failure. Attributions are categorized by locus, stability, and controllability (Weiner, 1986; 2000). *Locus* refers to the location of the cause as internal (e.g., ability) or external to the individual (e.g., task difficulty), contributing to different affective responses depending on perceived responsibility for success or failure.

Stability refers to whether the attribution is stable over time (e.g., aptitude) or changes (e.g., task difficulty), which contributes to expectancies for future outcomes. Poor motivation results from stable attributions to failure, as the individual believes that failure cannot be overcome.

Controllability considers whether the individual can control the cause (e.g., effort) or if it is uncontrollable (e.g., luck). These causal dimensions influence future expectancy and psychological affect, including self-esteem and emotions such as pride, guilt, hopefulness, and hopelessness (Weiner, 1986). In turn, affect and expectancy of success or failure, as well as learning history, school subject, and feedback from others, influence attributional responses, motivation, achievement, and self-perception (Boekaerts et al., 2003; Reyna & Weiner, 2001; Weiner, 1986; 2000).

Individuals that believe that their successes are dependent on internal, stable, controllable causes such as ability, and attribute failure to unstable causes tend to have increased motivation, higher self-concept, greater persistence and engagement on difficult tasks, increased academic satisfaction, and improved achievement (Carr, Borkowski, & Maxwell, 1991; Kloosterman, 1988; McClendon & Wigfield, 1998; Nurmi et al., 2003; Seifert, 2004; Struthers & Perry, 1996; Weiner, 1986). These children, characterized by a positive motivational and attributional profile, task enjoyment, and persistence, are labelled as mastery goal oriented and typically have higher academic performance (Anderman & Midgley, 1998). In contrast, performance goal oriented

individuals attribute success to external causes and failure to internal causes, and as a result tend to have lower motivation, expectancy for success, task enjoyment, effort, and perceived competence, and poorer academic performance (Anderman & Midgley, 1998; Carr et al., 1991; Chan, 1994; Pintrich et al., 1994; Shell et al., 1995; Weiner, 1986). However, a helpless attributional style may have a positive relationship to academic performance and improvement, especially when the task is important to the individual (Houston, 1994; Yee et al., 2003).

Attributions for success and failure have been found to mediate the relationship between ability and self-concept, which has an impact on academic success (Carr et al., 1991; Kloosterman, 1988; Weiner, 1986). Bandura (1993) also proposed that self-efficacy and perceived competence influence attributions. Yee and colleagues (2003) stated that psychological processes, which may include self-concept, interest, and perceived effort, mediate the relationship between attributions and performance. For example, attributing failure to the self, such as lack of ability, results in decreases in self-concept and expectancy of future failures, as ability is an internal and stable cause that is unchangeable (Weiner, 1986; 2000). If these attributions are consistent, a low self-concept is maintained and learned helplessness develops (Weiner, 2000). On the other hand, an adaptive profile of attributing success to the self, such as one's ability or effort, leads to heightened perceived competence, and increased academic achievement (Núñez et al., 2005; Weiner, 1986). Weiner (1986) also recognized that external attributions for failure enhance and protect self-concept.

Low-achievers tend to have maladaptive attributional profiles. Maladaptive attributions are characterized by attributions for success to external and uncontrollable factors rather than one's own abilities or efforts, and attributions for failure to ability, which may predict low self-concept, decreased motivation, and poorer performance (Carr et al., 1991; Chan, 1994; Elliott &

Dweck, 1988; Núñez et al., 2005; Pintrich et al., 1994; Shell et al., 1995; Struthers & Perry, 1996). Children that tend to attribute success to external causes also lack a sense of personal control, which has a negative impact on self-concept, persistence, and strategy use (Carr et al., 1991; Chan, 1994; Pintrich et al., 1994; Shell et al., 1995).

Thus, several dimensions of motivation and attributions influence academic achievement, although additional research is necessary to understand how the components of motivation are related to achievement across the school years. It is apparent that children with higher motivation experience increased academic success, as well as more positive perceptions of competence and effort, adaptive attributions, and increased interest, resulting in improved overall school functioning and performance (Gottfried, 1990). It is crucial to identify low motivation in the early elementary years, as problems with motivation and the consequences on academic achievement may intensify as children age due to the natural downward trend in motivation discussed earlier (Gottfried et al., 2001).

Method

Participants

Participant selection was based on a study of motivation and reading skills of children with reading disabilities and normally developing children by Frijters and Fulmer. The normally developing children from this previous study were recruited for a one-year follow-up to examine motivation and reading achievement over time. Children in the original sample ($N = 139$) ranged from 9 to 14 years ($M = 11.68$, $SD = 1.47$) and were 55% female. Twenty-seven of these participants were Grade 8 students that could not be recruited for the follow-up because they had relocated to different schools. Of the remaining 112 participants, 70 returned to the present study, 32 did not return the consent form, and 10 did not consent to participate in this follow-up

(37.5% drop out rate). The 70 returning participants ranged from 10 to 14 years ($M = 12.21$, $SD = 1.19$), were 60% female, and had normally developing reading ability (Woodcock Word Attack Standard Score: $M = 97.37$, $SD = 9.80$; Woodcock Word Identification Standard Score: $M = 99.59$, $SD = 9.52$) and receptive vocabulary (PPVT Standard Score: $M = 109.53$, $SD = 9.96$). No significant differences on any of the motivation or reading ability measures were found between those that returned and those that did not return the consent form, or between those that returned and those that did not consent to this study ($p > .05$).

Analyses not requiring a longitudinal sample and the validation of the measures created for this research were completed with 127 participants, including the 70 returning participants and 57 additional children. These students (63 male, 64 female) were from two schools and ranged in age from 10 to 14 years ($M = 12.30$, $SD = 1.18$). Participants had average reading ability (Woodcock Reading Mastery Tests: Word Attack Scale Score $M = 97.76$, $SD = 10.40$; Word Identification Standard Score $M = 99.00$, $SD = 10.27$) and receptive vocabulary (PPVT Standard Score: $M = 108.86$, $SD = 10.39$).

Measures of Reading Achievement

Selected measures were based on the numerous component skills involved in reading achievement (Shell et al., 1995). The assessment of reading-related skills also allows for an analysis of the changing relationship between motivation and reading skills across the elementary and middle-school grades. The following are the psychoeducational measures used to assess the particular components of reading achievement, along with details of administration and published psychometric properties.

Woodcock Reading Mastery Tests. Children's literacy skills were assessed using the Word Identification and Word Attack subscales of the Woodcock Reading Mastery Tests –

Revised (WRMT-R; Woodcock, 1987). These subtests possess good psychometric properties, demonstrating constant standard errors of measurement across age and ability levels, split-half reliabilities above .90, and concurrent validity with other reading tests (i.e., Woodcock-Johnson achievement tests). The Word Identification subtest is a measure of sight vocabulary, and determines the number of single words the participant can read without a context. The words are presented individually and increase in difficulty, with a five second time limit for each item. The internal consistency reliability coefficient for this subtest ranges from .91 to .98 across the grade levels included. The Word Attack subtest is used as a measure of the participants' decoding skills using phonological and analytic skills. Children are required to pronounce nonsense words (e.g., nan) they have never seen before, which increase in difficulty. The internal consistency reliability coefficient for this subtest ranges from .89 to .91 across the grade levels.

Comprehensive Test of Phonological Processing. The Elision and Blending subtests of the Comprehensive Test of Phonological Processing (CTOPP; Wagner, Torgesen, & Rashotte, 1999) are useful measures for studying phonological awareness and relating this ability to reading proficiency (Wagner et al., 1999). The CTOPP is a reliable measure, with internal consistency alpha coefficients ranging from .79 to .92 and test-retest reliabilities ranging from .72 to .88 for the subtests and ages included in this study. Good criterion-prediction and construct-identification validity have also been established. The Elision subtest requires the child to delete progressively more difficult phonemes, syllables, or digraphs from an orally presented target word. The examiner presents a word and asks the child to pronounce the word without a particular sound (e.g., "Say /flagpole/"; "Now say /flagpole/ without saying /flag/"). The Blending subtest requires the child to put individually presented phonemes together to identify a whole word (e.g., "What word does /s/ /a/ /n/ /d/ make?). The phonemes are presented by

audiotape, and thus, are standardized for all children. Scoring on these subtests is the number of correct item responses before reaching the ceiling of three consecutive errors.

Rapid Automatized Naming. Naming speed was measured using the letters and numbers subtests of Rapid Automatized Naming (RAN: Wolf & Denckla, 2003). Rapid naming is a good predictor of reading achievement because the retrieval speed and integration of visual and verbal processes are integral to reading and fluency (Wolf, 1991). The numbers subtest consists of the numbers 2, 4, 6, 7, and 9, and the letters subtest uses high-frequency lowercase letters a, d, o, p, and s. After displaying competence in identifying each of the letters or numbers in a pre-test, children are asked to read a card containing 50 randomly arranged letters or numbers, organized in rows of 10, as quickly as possible without making a mistake. The time in seconds to complete the task was used as the outcome measure, so better performance is indicated by lower times.

Peabody Picture Vocabulary Test. The Peabody Picture Vocabulary Test – Third Edition (PPVT-III: Dunn & Dunn, 1997) was used as a measure of receptive vocabulary and vocabulary acquisition. Participants are required to point to one of four pictures that best describes the meaning of a word presented orally (e.g., “Point to the picture that best tells the meaning of the word ladder,” with pictures of a ladder, staircase, fence, and bookcase). Participants receive one point for each picture correctly identified, until incorrectly identifying 8 out of 12 pictures in a section. The PPVT-III is considered to be a reliable measure, with internal consistency alpha coefficients of .95 or .96 for the age groups in this study, as well as good content and construct validity as a measure of hearing vocabulary (Dunn & Dunn, 1997).

Measures of Motivation

Intrinsic Motivation Inventory. The selection of this measure was based on research noting the efficacy of domain-specific measures in the study of motivation (Marsh, 1992; Zeleke,

2004). The Intrinsic Motivation Inventory (IMI; Plant & Ryan, 1985; Ryan, Connell, & Plant, 1990) was adapted from a more general measure of task-commitment to ensure an age-appropriate measure of children's motivational orientation. Past research has shown good psychometric properties of the IMI, with high internal consistency (i.e., above .80) in a variety of settings and good construct validity (McAuley, Duncan, & Tammen, 1987). Furthermore, reliability is not adversely affected when the IMI is modified to a specific domain or context (Ryan, 2002). The full inventory consists of seven subscales. For this study, the subscales of Interest/Enjoyment, Perceived Competence, and Perceived Effort were selected based on research suggesting these components as essential features of motivational orientation in the domain of reading (i.e., Baker & Wigfield, 1999; Chapman & Tunmer, 1995; Wigfield & Guthrie, 1997). In order to relate the IMI to reading, the items were adapted accordingly (e.g., "Overall, I enjoy doing ____ very much" was changed to "Overall, I enjoy reading"). Sample items for the three subscales include the following: 1) "Overall, I enjoy reading" for Interest/Enjoyment; 2) "I am good at reading" for Perceived Competence; 3) "I put a lot of effort into reading" for Perceived Effort. An ePrime protocol automated delivery and data collection, with items being randomly presented one at a time on a computer screen for each child. Children are instructed to listen to the computer read each item, but that they may read along, or ask for clarification on any item. Participants rate each statement on a visual 4-point scale (1 = very true; 2 = sort of true; 3 = just a little true; 4 = not at all true).

Post-Passage IMI. The Post-Passage IMI was designed as a measure of children's motivational state after a challenging reading passage. The scale was verified with principal component analysis using varimax rotation, yielding a three factor solution corresponding to the three subscales in the IMI (Interest, Perceived Competence, Perceived Effort). The observed

internal consistency reliability was high (IMI-R Cronbach's $\alpha = .92$), and Cronbach alpha coefficients ranged from .88 to .92 for the three subscales (see Appendix A for description, validation, and reliabilities of this measure).

Measures of Attributional Style

Hypothetical Situation Attribution Scale. This scale was designed as a measure of children's attributional orientation for reading success and failure. Principal components analysis verified a three factor structure (Internal-Stable; Internal-Unstable; External) for both the success and failure scenarios. The internal consistency reliability of the success items was low with a Cronbach alpha coefficient of .55, and coefficients for the subscales ranged from .67 to .74. The internal consistency reliability of the failure items was moderate with a Cronbach alpha coefficient of .79, and the internal consistency of the subscales was acceptable, ranging from .67 to .77 (see Appendix B for description, validation, and reliabilities of this measure).

Post-Passage Attribution Scale. This measure was constructed as a measure of attributional state for the experience of failure after a challenging reading task. Principal components analysis yielded three factors (Internal-Stable; Internal-Unstable; External-Stable). The internal consistency reliability of the scale was high at .86, with Cronbach alpha coefficients ranging from .81 to .86 for the three subscales (see Appendix C for description, validation, and reliabilities of this measure).

Procedure

In Spring 2006, participants completed all measures of reading achievement and the measure of motivation individually in a quiet room at their school. In the Spring of 2007, reading achievement and motivation were reassessed, as well as attributional orientation, in a single

session. Two to three weeks after this session, the Post-Passage IMI and Post-Passage Attribution Scales were completed.

Results

Developmental Course of Motivation

Linear multiple regression using hierarchical models was employed to assess longitudinal changes in terms of academic achievement as a function of motivation. Results of the regression demonstrated that motivation had no significant relationship with current reading achievement when controlling for achievement at time 1. With Woodcock Basic Skills Cluster scores at time 2 as the dependent variable, model one including only the Woodcock Basic Skills Cluster scores for time 1 was significant, $R^2 = .87$, $F_{\text{inc}}(1, 68) = 465.69$, $p < .001$. In step two, the addition of the three components of motivation (interest, perceived competence, perceived effort) from time 1 did not significantly add to the prediction of reading ability, $R^2 = .88$, $F_{\text{inc}}(3, 65) = 1.72$, $p = .17$. Thus, after controlling for past achievement, previous motivation did not significantly predict current reading ability, accounting for a .009 change in R^2 once added to the model. It is important to note that within this model, perceived competence at time 1 contributed significantly to the prediction of current reading ability ($\beta = .143$, $p = .047$).

Simple linear regression of current motivation predicting current reading ability demonstrated that motivation accounted for 24% of the variance in current reading ability, $R^2 = .24$, $F(3, 66) = 6.80$, $p < .001$. Perceived competence contributed significantly to the prediction of reading ability ($\beta = .56$, $p < .001$), while both interest ($\beta = -.01$, $p = .96$) and perceived effort ($\beta = -.21$, $p = .14$) did not significantly predict reading ability in the model.

Mean comparisons and paired-samples t-tests were used to examine interest, perceived competence, and perceived effort over a one year period. Means and standard deviations are

displayed in Table 1 and Figure 1 for each age. Trends over the one-year interval did not differ significantly for males and females, so results pertain to all participants. Nine-year-old children showed an increase in interest over the year, while the trend for all other age groups was a decline in interest, with a significant decline for children that were age 12 at time 1, $t(16) = 3.39$, $p = .004$, corresponding with the change from Grade 6 to 7. In terms of perceived competence, the findings suggest increases over the year for both the 9- and 10-year-old children, and a declining trend for children aged 11 and older. Finally, a pattern of increased perceived effort was found for children aged 9 to 11, while children 12 and 13 on average reported a decrease in reported perceived effort. Overall, a declining trend in motivation was most pronounced for children aged 12 at time 1, corresponding with the common finding that motivation declines with the transition to middle school.

Table 1
Mean Change in Motivation over a One-Year Period by Age (N = 70)

Age at Time 1	Interest (Time 1) <i>M (SD)</i>	Interest (Time 2) <i>M (SD)</i>	Perceived Competence (Time 1) <i>M (SD)</i>	Perceived Competence (Time 2) <i>M (SD)</i>	Perceived Effort (Time 1) <i>M (SD)</i>	Perceived Effort (Time 2) <i>M (SD)</i>
9 (<i>N</i> = 4)	2.57 (1.06)	2.86 (1.35)	3.17 (0.89)	3.46 (0.75)	3.50 (0.35)	3.56 (0.59)
10 (<i>N</i> = 19)	3.05 (0.82)	2.95 (0.77)	3.22 (0.71)	3.35 (0.68)	3.26 (0.72)	3.39 (0.63)
11 (<i>N</i> = 17)	3.08 (0.64)	3.02 (0.85)	3.24 (0.69)	2.99 (0.82)	2.99 (0.72)	3.07 (0.95)
12 (<i>N</i> = 17)	3.19 (0.56)	2.70 (0.87)	3.41 (0.51)	3.21 (0.95)	3.46 (0.55)	3.01 (0.87)
13 (<i>N</i> = 13)	3.06 (0.42)	2.71 (0.56)	3.49 (0.53)	3.38 (0.72)	3.50 (0.34)	3.29 (0.48)
Totals	3.06 (0.66)	2.86 (0.81)	3.32 (0.63)	3.24 (0.79)	3.30 (0.63)	3.21 (0.76)

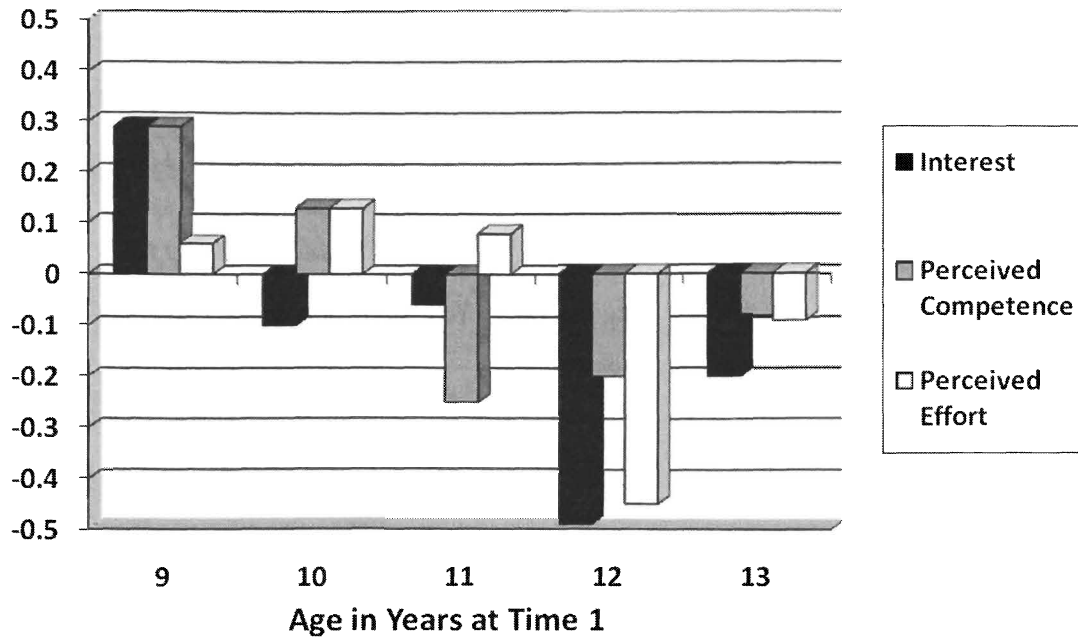


Fig. 1. Change in motivation over a one-year interval by age at time 1.

Correlational analyses were employed to investigate the relationships between the components of motivation at both time points. All three components of motivation at time 1 were significantly correlated with their respective time 2 motivation measures, demonstrating the stability of interest ($r = .62, p < .001$), perceived competence ($r = .57, p < .001$), and perceived effort ($r = .33, p = .005$) over a 1-year duration. Interest at time 1 was also significantly correlated with perceived competence at time 2 ($r = .33, p = .006$), and perceived competence at time 1 was correlated with interest at time 2 ($r = .46, p < .001$). Interest at time 1 was also correlated with effort at time 2 ($r = .28, p = .020$), and perceived effort at time 1 was correlated with interest at time 2 ($r = .26, p = .028$). Thus, it is clear that these components of motivation are positively interconnected in the domain of reading.

Relationship among Motivation, Attributions, and Achievement

Differences in the relationship between the three components of motivation and reading-related skills emerged when dividing children into elementary (Grade 5 and 6) and middle school (Grade 7 and 8) age groups (see Table 2). For children in the elementary grades ($N = 64$), interest and competence were significantly and positively related to raw and standardized scores on the Word Attack and Word Identification subtests ($p < .001$), and the Blending subtest of the CTOPP. Children with higher interest also had faster times on rapid naming of numbers ($r = -.28, p = .025$). Perceived competence was significantly positively related to standard scores on the PPVT ($r = .31, p = .013$). For this age group, perceived effort was significantly related to raw ($r = .26, p = .039$) and standardized scores ($r = .31, p = .013$) on the Word Identification subtest, and standardized scores on the Word Attack subtest ($r = .26, p = .034$). Overall, perceived competence and interest seem to be particularly important at this age in terms of sight vocabulary, decoding skills, and phonological awareness.

Table 2
Correlations between Motivation and Reading-Related Skills in Elementary and Middle School Age Groups

	Elementary (Grade 5-6) ($N = 64$)			Middle School (Grade 7-8) ($N = 63$)		
	Interest	Perceived Competence	Perceived Effort	Interest	Perceived Competence	Perceived Effort
Word Attack Raw	.44***	.55***	.24	.16	.36**	-.00
Word Attack Scale	.42**	.56***	.26*	.20	.35**	.01
Word ID Raw	.51***	.57***	.26*	.26*	.50***	.12
Word ID Scale	.51***	.61***	.31*	.26*	.46***	.10
CTOPP Blending	.28*	.30*	.12	-.02	.17	-.15
CTOPP Elison	.22	.24	.11	.05	.18	-.10
PPVT Raw	.12	.23	-.05	.26*	.44***	.10
PPVT Standard	.14	.31*	.04	.29*	.46***	.10
RAN Letters	.22	-.08	.08	-.35**	-.48***	-.26*
RAN Numbers	-.28*	-.12	.08	-.21	-.41**	-.15

Note: *** $p < .001$; ** $p < .01$; * $p < .05$

For the middle school age group ($N = 63$), perceived competence had the strongest relationship with reading-related skills, and had a significant positive correlation ($p < .01$) with raw and standardized scores on the Word Attack and Word Identification tests, both raw and standardized scores on the PPVT, and a significant negative correlation with both subtests of the RAN. Interest was significantly correlated with the raw and standardized scores of the Word Identification subtest ($r = .26, p = .043$ and $r = .26, p = .036$, respectively), and raw and standardized scores of the PPVT ($r = .26, p = .044$ and $r = .29, p = .020$, respectively), as well as negatively correlated with the letters subtest of the RAN ($r = -.35, p = .005$). The only correlation with perceived effort for this age group was a negative correlation with rapid automatized naming of letters ($r = -.26, p = .040$). It is evident that perceived competence was important for reading-related skills, but interest and perceived effort may reduce in importance with age.

General self-reported motivation at time 2 was correlated with children's self-reported motivation after the challenging passage to determine the consistency between children's general motivational orientation and situation-specific motivational state (see Table 3). Post-passage interest was significantly correlated with general interest ($r = .42, p < .001$) and effort ($r = .45, p < .001$). Post-passage perceived competence was correlated with all components of motivation ($p < .001$), and most strongly with general perceived competence ($r = .48, p < .001$). Post-passage perceived effort was also correlated with all components of motivation ($p < .05$), and most strongly with general perceived effort ($r = .60, p < .001$).

Hypothetical situation attributions were correlated with motivation to determine the relationship between attributional orientations in success and failure situations and motivational orientations (see Table 3). Internal-stable attributions for success, which included ability and interest, were significantly positively correlated with all components of motivation ($p < .001$).

This demonstrates that children that attribute their successes to their ability and individual interest tend to have higher motivation, especially in terms of perceived competence and interest. It is also likely that children with high motivation are likely to attribute their successes to these factors. Internal-unstable attributions for success, which relate to effort, were significantly positively correlated with perceived competence ($r = .25, p = .005$) and interest ($r = .44, p < .001$), and most strongly with effort ($r = .57, p < .001$). Thus, children with higher motivation are likely to attribute their successes to effort, while those that see themselves as succeeding as a result of their effort tend to have higher motivation, and perceived effort in particular. External attributions for success were negatively correlated with all three components of motivation ($p < .01$). Children with higher motivation are less likely to attribute their success to external causes, while children that attribute their success to external causes tend to have lower motivation.

Table 3

Correlations between Motivation and Post-Passage Motivation, Hypothetical Situation Attributions, and Post-Passage Attributions (N = 127)

	Interest	Competence	Effort
Post-Passage Motivation			
Interest	.42***	.12	.45***
Competence	.44***	.48***	.38***
Effort	.39***	.21*	.60***
Hypothetical Situation Attributions			
Success Internal-Stable	.73***	.64***	.42***
Success Internal-Unstable	.44***	.25**	.57***
Success External	-.32***	-.30**	-.24**
Failure Internal-Unstable	-.46***	-.15	-.31***
Failure Internal-Stable	-.36***	-.48***	-.22*
Failure External	-.23*	-.40***	-.12
Post-Passage Attributions for Failure			
External-Stable	-.19*	-.19*	-.13
External-Unstable	-.15	-.13	-.15
Internal-Stable	-.68***	-.67***	-.44***
Internal-Unstable	-.42***	-.22*	-.39***

Note:*** $p < .001$; ** $p < .01$; * $p < .05$.

In terms of failure hypothetical attributions, internal-unstable attributions to effort were negatively correlated with interest ($r = -.46, p < .001$) and perceived effort ($r = -.31, p < .001$). Accordingly, children with higher interest and perceived effort were less likely to attribute their failure to internal-unstable causes, including effort. Children attributing failure to effort may have lower ratings of effort and interest. Internal-stable attributions for failure, which included ability and interest, were significantly negatively correlated with perceived competence ($r = -.48, p < .001$), interest ($r = -.46, p < .001$), and effort ($r = -.22, p = .014$). It is possible that children that attribute failure to their ability and interest may have lower ratings of their competence and interest in reading. External attributions for failure were negatively correlated with interest ($r = -.23, p = .01$) and perceived competence ($r = -.40, p < .001$), demonstrating that children with higher perceived competence and interest were less likely to attribute their failure to external causes, while children that tended to attribute failure externally had lower perceptions of competence and interest in reading.

Post-passage attributional states measured after the challenging reading experience were correlated with the three components of motivation (see Table 3). Children's external attributions to unstable causes did not correlate significantly with any of the measures of motivation ($p > .05$). In this case, attributions specific to the task were not strongly related to children's motivational orientation. Children's external stable attributions were negatively correlated with interest ($r = -.19, p = .032$) and perceived competence ($r = -.19, p = .032$). Therefore, children that attribute their failure to task characteristics tended to have lower interest and perceived competence, while children with higher interest and perceived competence were less likely to attribute failure to the task. Children's attributions to internal-stable causes, which included ability and individual interest in reading, were significantly negatively correlated with all

components of motivation ($p < .001$), most strongly with perceived competence ($r = -.67$) and interest ($r = -.68$). Children's internal-unstable attributions to effort and interest in the task were negatively correlated with all components of motivation ($p < .05$), particularly in terms of perceived effort ($r = -.39, p < .001$) and interest ($r = -.42, p < .001$). The negative correlations demonstrate that children with higher motivation tended to make fewer internal attributions, or children that attribute failure to internal causes were likely to have lower motivation.

Discussion

Overall, findings of the follow-up study of motivation confirmed that previous motivation did not predict current reading achievement after controlling for past achievement. An examination of the changes in motivation over the one-year period for each age group showed that declines in motivation began as soon as age 10, and declines in all areas of motivation are consistent by age 11 and 12. Furthermore, the relationships between the components of motivation at both time points were significant and strong, demonstrating that motivational orientations in reading appear to be stable over a one-year period. Interrelationships between different components of motivation were also evident, with significant positive correlations between competence and interest at the two time points (Eccles & Wigfield, 1995; Roeschl-Heils et al., 2003; Wigfield et al., 1997; 2004). A positive correlation between interest and effort was also found, which contradicts research concluding that perceived effort is negatively related to interest (Eccles & Wigfield, 1995).

Past research has found a strong relationship between early motivation for reading and later achievement (Gottfried, 1990), even once prior achievement is controlled (Roeser et al., 1996). However, past motivation accounted for an insignificant prediction in current reading ability once controlling for previous achievement. Research specific to classroom contexts has

discussed the dynamic nature of motivation, such that motivation is in constant change due to aspects of the context and task, individual affect and goals, and performance evaluation (Covington, 2000; Linnenbrink & Pintrich, 2002a). It is possible that the dynamic and changing nature of motivational states makes it difficult to predict reading achievement over time. It is important to note that earlier perceived competence was a significant positive predictor of current achievement once controlling for past achievement, corresponding to Roeser and colleagues' (1996) findings. Perceived competence was shown to have the highest predictability of achievement amongst the components of motivation studied, demonstrating the importance of this construct for children's achievement in reading (Bouffard et al., 2003; Chan, 1994; Roeschl-Heils et al., 2003; Schunk & Pajares, 2005; Shell et al., 1995; Wigfield & Guthrie, 1997).

In terms of the changes in motivation in each age group, interest in reading began to decline at age 10, corresponding with research that has shown the decline in interest beginning in late elementary school (Bouffard et al., 2003; Chapman & Tunmer, 1995; Wigfield et al., 1997), with the strongest decline between Grade 6 and 7. The decline in perceived competence was also found to begin at age 11, while perceived effort started to decrease at age 12. Overall, declines in motivation were most pronounced for children at age 11 and 12, corresponding to research showing the strong decline in motivation with the transition to middle school (Anderman & Anderman, 1999; Eccles et al., 1989; Lepper et al., 2005; Roeser & Eccles, 1998). The decrease in effort may be an expected trajectory for normally developing children, as with increasing skills they would require less effort to experience success in reading. However, the decrease in effort may present a problem if children begin to show a lack of persistence or a lack of desire to read at levels that challenge their current skills. As intrinsic motivation is considered to be crucial for the development of reading-related skills (Wigfield & Guthrie, 1997), this decline

must be considered in light of instructional and pedagogical implications. The encouragement of reading for enjoyment in the early years should be translated to instructional strategies to stimulate similar interest towards reading for older children.

Correlations between motivation and achievement were analyzed in two separate age groups to better understand possible changes in this relationship. Perceived competence and interest were most strongly related to reading skills in Grades 5 and 6, especially in terms of positive correlations with word identification, decoding skills, and phonological blending ability. Perceived effort was also positively related to word identification and decoding skills at this age. Motivational orientation and reading-skills have a positive relationship in the later elementary years, particularly in terms of word reading abilities (Chapman & Tunmer, 2003).

At the middle school age, perceived competence remained important for the skills in the elementary years, in addition to vocabulary and rapid naming. Interest decreased in importance, but remained significant for word recognition skills, and further contributed to vocabulary skills and rapid naming. Perceived effort was no longer related to achievement in middle school, with the only relationship existing with rapid naming of letters. It is likely that normally developing children may not have to try hard when reading, but still score average or above-average on phonological or vocabulary measures because they have developed the necessary skills.

In accordance with the longitudinal results discussed previously, perceived competence was shown to be the most important component of motivation in predicting reading achievement and skills, and was significant for a wider variety of skills with increasing age. This corresponds with a wealth of research on the importance of self-concept for achievement (Bouffard et al., 2003; Chan, 1994; Deci et al., 1991; Roeschl-Heils et al., 2003; Schunk & Pajares, 2005; Shell et al., 1995; Swalander & Taube, 2007; Wigfield & Guthrie, 1997). Interest was related to word

decoding and recognition in the elementary years, and became important for vocabulary skills in middle school. It is possible that interest in reading leads to greater vocabulary and word identification skills in the older grades, as children with higher interest in reading are likely to read more and process text more thoroughly (Alexander & Jetton, 1996; Cordova & Lepper, 1996; Hidi, 2001; Roeschl-Heils et al., 2003; Wigfield & Guthrie, 1997). Finally, perceived effort in reading was important only for elementary children's word identification and decoding ability. Several authors have discussed that children with high achievement tend to report lower perceptions of effort, as they do not feel that they need to try hard (Sullivan et al., 2006), leading to some of the negative, though insignificant, correlations with perceived effort and reading skills.

Finally, correlations between motivation and attributions were examined to determine the relationships between these constructs. Overall, strong positive relationships emerged with each component of motivation and the situation-specific measure of interest, perceived competence, and perceived effort, showing the consistency in children's motivational orientations and motivational states in particular tasks. Guthrie, Hoa, Wigfield, Tonks, and Perencevich (2006) also found that increased situational motivation predicted higher reported general motivation. A child's general perceived effort and interest in reading were positively related to all components of motivation after the challenging task, while perceived competence was significantly related to task-related competence and effort.

The interconnectedness of motivation and attributions was evident in the overall strength and consistency of relationships, demonstrating the importance of these two factors in the domain of reading. In particular, internal-stable attributions of reading success to ability and interest were significantly and positively related to children's self-reported perceived

competence and interest in reading. Thus, the relationship between attributions and motivation was evident, such that children with higher motivation, in terms of their perceptions of their own ability and overall interest in reading, were more likely to attribute their successes to these traits and less likely to attribute their failure to these particular traits. These findings correspond to research that has found that attributions to the self in success situations relate to increased motivation and self-concept (Carr et al., 1991; Kloosterman, 1988; Núñez et al., 2005; Nurmi et al., 2003; Weiner, 1986), and Bandura's (1993) suggestion that perceived competence impacts attributions. A similar pattern emerged with internal-unstable attributions to effort, such that children with higher perceptions of their effort were more likely to attribute their success to their effort and less likely to attribute their failure to this cause.

Therefore, children with higher motivation tend to recognize this as important for their performance, attributing their successes to these aspects of motivation, including their ability, interest, and effort. On the other hand, children that consider themselves as less competent and interested in reading are more likely to realize that their failure may be due to these causes, which would perpetuate these negative feelings of the self and decreased motivation. Weiner (1986; 2000) also observed that internal attributions to the self in failure situations can result in decreased self-concept, as the individual is attributing failure to causes that are stable and unchangeable. As a result, taking personal responsibility for successes, such as attributing success to ability, can help to enhance motivation and perceptions of ability.

Regarding external attributions, children that attributed their successful performance to external causes had lower self-reported motivation in all three components. This corresponds to research showing that children that attribute success to external causes have lower self-concept and motivation, possibly due to a lack of personal control (Carr et al., 1991; Chan, 1994; Pintrich

et al., 1994; Shell et al., 1995). Although Weiner (1986) stated that attribution to external causes in failure situations is beneficial for self-concept, children that attributed their failure to external causes displayed lower motivation, especially in terms of perceived competence.

Overall, children's feelings about themselves as readers and their motivation towards reading translated into performance evaluations. Children recognized aspects of themselves and the context that impacted their achievement, and were aware of how these evaluations connected to their feelings about reading and themselves as readers. If children feel positively about their abilities, they will assess their successful performance as a result of these abilities and skills. It is also potentially useful that children with low perceptions of their ability were more likely to blame failure on this lack of skill. Although this could be a sign of learned helplessness, this awareness of how their feelings about their ability, effort, and interest affect their performance can be useful to elicit change in these attributions.

Motivation is a dynamic and changing characteristic, and therefore, increasing the frequency of measurements and decreasing the length of time between measurements would provide additional information regarding the consistency and reliability of these findings. The findings derived from this specific population may not generalize to other geographic regions, including regions comprised of distinctive ethnic and/or demographic characteristics, and those with different school and/or parental attitudes towards reading. Results should only be generalized if results are replicated in other regions and cultures.

As previously discussed, there are several weaknesses in the reliance on self-report measurement. Results may have been swayed by overly optimistic assessments of competence or interest, or a negative report bias on the motivation measure. The attribution measurements may have been too complex for some children's reading and comprehension abilities, and some

children may have been unable to relate to particular situations or attributions. Determining how to conceptualize, define, and measure motivation and attributions remains controversial, and tapping into an individual's cognitive assessment is only one aspect of the complex construct of motivation. The integration of additional methodological and conceptual approaches to motivation can help to compensate for these limitations.

Conclusion

Motivation is a complex and multifaceted factor affecting learning and achievement that can change depending on the context, task, and individual. Despite dissimilarities in individual motivational orientations and the dynamic nature of motivation, it is unmistakable that children's perceptions of their own abilities are crucial for achievement outcomes across the elementary and middle-school years, and that motivation declines with age. While other components of motivation, such as interest and perceived effort, may change in effectiveness for achievement outcomes, the practical importance of positive motivational orientations is recognizable to educators, and thus, should be encouraged in the classroom. There is also a strong relationship between motivation and attributions, with research finding that attributions can mediate the relationship between motivation and achievement (Carr et al., 1991; Kloosterman, 1988; Weiner, 1986). Children are aware of how their feelings about themselves as readers impact their performance, and due to this awareness, it may be possible to encourage more positive and adaptive attributions to improve motivation and achievement. Future research should focus on the relationship between motivation and attributions, and how this relationship affects children's performance and later motivation.

A practical use of research on the motivational aspects of learning is the possibility of identifying profiles of children who may be at risk for poor achievement. Furthermore,

knowledge about intrinsic motivation for reading can facilitate important modifications of learning contexts to encourage children's motivation and learning. Feelings of self-efficacy are crucial to motivation and the development of various reading skills. It is important to encourage children to attribute their reading accomplishments to competence, self-efficacy, effort, and ability, especially due to the connection between children's attributions and motivation for reading. A focus on the feelings related to achievement can contribute to students' feelings of competence, which may help to inhibit the natural downward trend in perceived competence with age.

Interest in reading also contributes to the motivation to read for enjoyment, providing children with additional opportunities to develop skills through overcoming challenges and reading at increasing levels of difficulty. Young children's interest in reading may be due in part to the unstructured, unrestricted opportunities to select reading materials that interest them and are appropriate to their reading level, offering guaranteed success and feelings of competence. However, although older children have developed a wider range of interests, the curriculum and instructional practices in middle-school restrict children's opportunities to explore their own curiosities. Thus, the interest that beginning readers have must be celebrated, sustained, and translated into age-appropriate pedagogical strategies so that this overall decline in interest for older children is lessened.

Success in reading contributes to overall academic success, and as a result, research on literacy is only one step in enhancing students' learning. Although Ontario schools are focusing on literacy education and the skills and strategies readers need to succeed, students will only learn and use these strategies if they are motivated to read (Lau & Chan, 2003). As a result, research should focus on particular instructional practices that can enhance or hinder motivation.

This multi-theoretical study integrated three components of intrinsic motivation for reading that have been discussed in several theories of achievement motivation (i.e., Pintrich, 2003; Ryan & Deci, 2000; Snow & Jackson, 1993), as well as Weiner's (1986) attributional theory. The exclusive use of self-report measures in this study followed a typical methodological approach to the study of motivation. In the following study, a multi-methodological approach involving behavioural and self-report measures was utilized to examine the effects of developmentally inappropriate challenge and topic interest on children's motivation and attributions in the domain of reading.

STUDY II: TOPIC INTEREST PROTECTS MOTIVATION AND FOSTERS ADAPTIVE ATTRIBUTIONS DURING READING CHALLENGE

The following study examines situational influences on children's attributions and motivation. In particular, the impact of developmentally inappropriate challenge and topic interest on children's motivation and attributions in the domain of reading is considered. Children's motivational and attributional orientations are compared to self-reported situation-specific motivational and attributional states after a challenging reading task. This study also involves a multi-methodological approach, with the addition of behavioural measures of task persistence. The following review highlights research on the impact of challenge and topic interest on motivation, attributions, and persistence.

Research on motivation and academic achievement has investigated the impact of both interest and challenge for children's motivation and performance with academic tasks. These factors are especially important for reading motivation, as both interest in the topic and level of challenge are salient features of a text. Much of the research on the impact of challenge in academics has been carried out in the domain of mathematics (Schweinle, Turner, & Meyer, 2006; Sullivan et al., 2006; Turner & Meyer, 2004), possibly due to the observable nature of failure in this domain. However, children are commonly challenged with reading, as teachers often are not adept at choosing appropriate tasks for students' ability levels (Bennett, DesForges, Cockburn, & Wilkinson, 1984). Children of equal ability respond differently to failure or challenge. While some children adapt to the situation and maintain positive affect, persistence, and adaptive attributions of failure, other children become helpless, and experience negative affect, decreased persistence, and attribute their failure to ability (Diener & Dweck, 1978; Dweck, 1975). Therefore, research is needed to determine how interest and challenge

interconnect to shape motivation, persistence, and learning in order to better understand how to sustain children's motivation for reading.

Impact of Interest on Motivation and Persistence

Although beginning readers often have high intrinsic interest in reading (Baker & Scher, 2002), research has consistently found a decline in interest along with increasingly negative attitudes towards reading with age (Bouffard et al., 2003; Chapman & Tunmer, 1995; Eccles et al., 1993; Wigfield et al., 1997). Since interest is a critical aspect of intrinsic motivation for academics (Guthrie et al., 2006; Katz, Assor, Kanat-Maymon, & Bereby-Meyer, 2006; Ryan & Deci, 2000; Urdan & Turner, 2005), it is important to understand how children's interest during less than optimal reading situations may impact their motivation and persistence.

The two dominant types of interest that have been examined are *individual* and *situational*. Individual and situational interests are not independent, but interact to influence learning, motivation, and academic performance (Bergin, 1999; Hidi, 1990; Krapp, Hidi, & Renninger, 1992). Individual interest refers to stable individual predispositions towards certain activities and subjects, and has been related to increased learning, motivation, attention, positive attitudes, and persistence (Ainley, Hidi, & Berndorff, 2002; Alexander & Jetton, 1996; Alexander & Murphy, 1998; Krapp et al., 1992; Renninger & Hidi, 2002; Schiefele, 1996). Situational interest is a temporary and focused emotional state that develops from particular environmental or contextual stimuli; with reading, situational interest can be generated by certain structural characteristics of the text, content features, or pre-reading activities (Hidi, 1990; Krapp et al., 1992). Research has suggested that situational interest positively influences motivation, reading comprehension, engagement, and both the quality and quantity of learning (Alexander & Jetton, 1996; Flowerday, Schraw, & Stevens, 2004; Guthrie et al., 2006; Hidi, 1990).

The focus of the present study was topic interest, which is a particular form of interest that is triggered by a specific subject, topic, or the content of a task, involving both individual predispositions and aspects of situational interest (Ainley, Hidi, et al., 2002; Bergin, 1999; Schiefele, 1996; Wigfield & Eccles, 1992). High-interest texts are important for children's motivation, reading engagement, and comprehension (Guthrie, McRae, & Lutz Klauda, 2007). Topic interest has positive effects on learning through improved memory and text processing, attention and engagement, positive affect, persistence, and effort (Hidi, 1990; Renninger & Hidi, 2002; Schiefele, 1996; 2001; Wade, 2001). Since the title of a story is typically read before beginning a reading activity, topic interest is particularly relevant in the domain of reading (Hidi, 2001). Similar to the findings of Katz and colleagues (2006), it was speculated that topic interest may buffer the effects of a challenging reading experience on motivation, including individual interest in reading, perceptions of competence, perceptions of effort, and persistence. If topic interest in the particular activity can protect against declines in persistence and motivation, then more stable and developed forms of interest, such as individual interest, may serve similar functions in challenging reading situations.

A child's interest in a task is an important motivator for task involvement, effort, and persistence (Ainley, Hidi, et al., 2002; Ainley, Hillman, & Hidi, 2002; Pintrich & Schrauben, 1992; Sullivan et al., 2006). In their four-phase model of interest, Hidi and Renninger (2006) propose that either self-generated individual interest or maintained situational interest must be present for children to persist over an extended period of time. Situational interest that is simply triggered by the situation or activity is not enough for prolonged persistence (Mitchell, 1993). High initial motivation and interest based on the title of the text is correlated with increases in persistence and higher ratings of interest and positive affect while reading the text (Ainley, Hidi,

et al., 2002; Ainley, Hillman, et al., 2002; Vollmeyer & Rheinberg, 2006). Ainley, Hillman, and colleagues (2002) also found that in texts with low rated interest based on the topic, children were more likely to quit reading and reported feeling bored while reading. In contrast, Flowerday and colleagues (2004) concluded that topic interest did not influence attention, and that situational interest is more likely to increase attention and engagement.

Impact of Challenge on Motivation and Persistence

Much of the research on task difficulty has focused on perceived task difficulty. Thus the present study addressed the impact of unexpected challenge on motivation and persistence. Deci and Ryan's (1985) self-determination theory and research on motivation and task difficulty have specified that moderate and optimal challenge enhances intrinsic motivation, self-efficacy, effort, engagement, and learning (Pintrich & Schunk, 2002; Stipek, 1998; Turner & Paris, 1995). Flow theories of motivation (Csikszentmihalyi, 1975) assert the importance of a balance between perceived challenges and perceived ability in order for children to be attentive and motivated (Moneta & Csikszentmihalyi, 1996; Shernoff, Csikszentmihalyi, Schneider, & Shernoff, 2003). The level of challenge of an academic task impacts children's feelings and beliefs about the task because children value tasks in which they can succeed. While unchallenging tasks typically result in boredom, challenge beyond one's skill level threatens children's sense of competence, and can lead to feelings of anxiety and diminished feelings of success (Schweinle et al., 2006; Wigfield & Eccles, 2001).

When a task is excessively challenging, motivation is undermined and children are more likely to withdraw effort and experience lower feelings of confidence and competence (Deci & Ryan, 1985; Schweinle et al., 2006; Turner & Paris, 1995). For some students, challenging tasks are deemed as opportunities for failure and result in a decrease in expectancy of success and a

fear of failure (Elliot, 1999; Schultheiss & Brunstein, 2005; Turner & Paris, 1995). This fear has been linked to declines in motivation and effort and an increase in task avoidance, especially in classroom situations where a fear of appearing incompetent is more salient (Elliot, 1999; Urdan & Midgley, 2001). Vollmeyer and Rheinberg (2006) concluded that challenge supports learning when combined with an expectancy of success or self-efficacy, while it hinders learning if it is combined with a fear of failure. Instead of exerting additional effort in a challenging task, some children decide to avoid the task or reduce their effort to protect their sense of competence, as ability self-concepts are threatened if children exert effort and fail (Covington & Omelich, 1979). Thus the presence of challenge is not necessarily motivating, especially if the social context is unsupportive and the probability of success is low.

The difficulty of a task and probability of success are instrumental for the decision to exert effort or withdraw from an activity. Research has shown that highly efficacious children are more willing to persist in challenging situations (Bandura, 1993; Schunk, 1985). Achievement-motivated and high-achieving individuals often prefer medium difficulty tasks that provide opportunities to enhance performance and skills and offer the incentive of success (Schultheiss & Brunstein, 2005). This is particularly true for children with mastery or learning goals, as these children tend to remain persistent and attentive in challenging learning situations in order to master skills and increase competence (Sullivan et al., 2006). Those with lower achievement often have low expectancy for success at all levels of difficulty, and therefore are not motivated by tasks that are above their current ability level (Schultheiss & Brunstein, 2005). Similarly, Sideridis (1992) found that those struggling with language exhibited weaker intentions to contribute more effort and persist in order to improve their performance. Children with a preference for tasks with limited challenge often experience decreases in competence and lack

persistence in difficult learning situations (Sullivan et al., 2006). Likewise, children with limited exposure to challenging tasks lack confidence about their abilities to be successful (Miller, 2003). Due to the negative personal and social consequences of failure in a classroom situation, the effect of challenge on motivation is an important consideration.

Although research has focused on topic interest and challenge, little research has explored the interaction of these variables in the domain of reading. Wigfield and Eccles' (2001) expectancy-value model regards both task difficulty and interest as central to motivation and achievement. Similarly, Vollmeyer and Rheinberg (2006) concluded that the combination of interest, challenge, and expectancy of success were important for academic performance and enjoyment of learning. Students are more tolerant of challenge when the activity or topic is interesting or valued and some research has found that interest has a stronger influence on motivation than the challenge of a task (Schweinle et al., 2006). Children with well-developed individual interest are likely to persist, even in challenging or frustrating situations (Alexander & Murphy, 1998; Renninger & Hidi, 2002). It can be predicted that children with high general interest in reading will be more likely to persist with the challenging task.

However, the comprehensibility and difficulty of a text can negatively affect readers' interest in the task, even if they were initially interested in the topic (Alexander & Jetton, 1996; Wade, 2001). Renninger and Hidi (2002) also argued that, although topic interest is triggered by the title of the story, some children's interest can be maintained or enhanced, while others' interest may decline while reading. Task difficulty is a possible reason for this declined interest. One question that remains is whether topic interest can buffer the effects of a challenging situation on children's persistence and motivation with the task, or if the presence of challenge eradicates any motivational benefits of interest.

Relationship between Attributions and Motivation/Persistence

Attributional theory assesses motivation for academic tasks based on students' reasons for success or failure. Weiner (1986; 2000) categorized attributions along the dimensions of locus, stability, and controllability. The present study addressed how attributions for failure or difficulty, specifically in terms of locus and stability, interact with persistence and motivation in a challenging reading task. Attributions for success and failure in reading were considered in terms of an internal (e.g., effort) or external (e.g., task difficulty) locus, and a stable (e.g., ability) or unstable (e.g., luck) orientation. Research has shown that attributions contribute to different affective and motivational responses, including perceptions of competence, depending on the perceived locus and stability of the attribution for performance (Weiner, 1986; 2000).

Attributions to internal, unstable or external, uncontrollable causes in failure situations have been linked to positive achievement and emotional outcomes, such as higher motivation and self-concept, increased persistence and engagement on difficult tasks (Carr et al., 1991; Marsh, 1986; Nurmi et al., 2003; Seifert, 2004; Struthers & Perry, 1996; Weiner, 1986). In particular, intrinsic motivation is protected when children attribute their failure to a lack of effort (Dweck, 1986; Grant & Dweck, 2003). Negative motivation and achievement outcomes, such as decreases in self-concept, persistence, task enjoyment, and overall achievement have been found in children who attribute their failure to internal, stable causes, and a lack of ability in particular (Anderman & Midgley, 1998; Carr et al., 1991; Chan, 1994; Dweck, 1986; Grant & Dweck, 2003; Núñez et al., 2005; Pintrich et al., 1994; Shell et al., 1995; Weiner, 1986).

This study was designed to assess the impact of a challenging reading task on children's motivation for reading, recognizing the value of examining motivation in actual reading situations. In general, the focus was on the effects of challenge or failure in reading on children's

motivation for reading, attributions for difficulty with reading, and persistence with the task. The possible influence of topic interest on students' responses to a challenging reading situation was also addressed. Attributions for performance are most prominent in situations where children experience failure (Weiner, 1986). Although failure in reading is subjective, it can be argued that experiences of frustration and difficulty elicit performance-based negative affect that unquestionably shapes motivation and attributions. Research has yet to explore how interest is related to attributions for learning (Schraw & Lehman, 2001); therefore, a second question that remains is how do topic interest and challenge relate to attributions for failure in reading, and how do motivation and attributions interact in challenging reading experiences?

The present study aimed to address three main questions regarding the stability of motivation and attributions during challenging reading tasks: 1) Does motivation for reading (interest, perceived competence, perceived effort) decline when children are required to read a challenging reading passage? 2) Is topic interest a protective factor during challenging reading tasks, and can it alter the effects of challenge on motivation, failure attributions, and persistence? 3) How do failure attributions change when children are confronted with a challenging reading task, and do children adopt a protective or maladaptive attributional state in the context of reading challenge?

Method

Participants

Students who participated ($N = 56$) were selected from one urban and one rural school in an Ontario school board. Participants, 62% of whom were male, ranged in age from 10 to 14 years ($M = 12.43$, $SD = 1.17$) and had average reading ability (Woodcock Reading Mastery Tests: Word Attack Scale Score $M = 98.20$, $SD = 11.27$; Word Identification Standard Score $M =$

98.39, $SD = 10.84$). Participants were matched into pairs according to: 1) score on the Woodcock Reading Mastery Tests Basic Skills Cluster, which includes the averaged W scores of the Word Attack and Word Identification subscales; 2) self-reported interest in reading, using the Interest subscale of the modified IMI-Reading; and 3) age. Once the pairs were obtained, participants were randomly assigned to either the Interesting Passage or Non-Interesting Passage condition. There were no pre-experimental differences between the passage condition groups on reading ability, $t(27) = -1.29, p = .21$, interest in reading, $t(27) = -.22, p = .83$, or age, $t(27) = -1.19, p = .24$. Participant characteristics are reported in Table 4.

Measures

Children's reading achievement was assessed using the Word Identification and Word Attack subscales of the Woodcock Reading Mastery Tests – Revised (WRMT-R; Woodcock, 1987). The revised Intrinsic Motivation Inventory (IMI) was used as a measure of motivational orientation and the Post-Passage IMI measured the situation-specific motivational state after the difficult reading passage. The Hypothetical Attribution Scale and Post-Passage Attribution Scale were also used as measures of attributional orientation and situation-specific attributional state (see Study I and Appendices A to C for descriptions of these measures).

Table 4
Participant Details for the Interesting and Non-Interesting Passage Conditions

	Reading Ability	Interest in Reading	Age
Interesting passage			
M	507.86	15.54	12.28
SD	13.54	5.69	1.28
Non-Interesting Passage			
M	508.45	15.64	12.64
SD	12.25	4.94	1.04

Note: Reading Ability refers to the child's Woodcock Reading Mastery Tests Basic Skills Cluster Score in W Score format. Interest in Reading refers to the sum of the child's responses to the interest items on the revised IMI-Reading, scaled from 1 to 4 for each of the nine questions.

Behavioural measure of persistence/effort. Observations of task continuation were incorporated as behavioural measures of persistence during the reading task. Children were provided with the option to discontinue reading after completing the first half of the reading passage. If children chose to continue, they were given the option to stop at any point. The amount of time to read the first half of the passage, as well as the second half if they chose to continue, were recorded as additional measures of persistence. Ainley, Hidi, and Berndorff (2002) used a similar technique, as they also provided students with a choice to discontinue reading and measured persistence in terms of the amount of time spent on each part of the story and how many pages were read.

Selection of ability-levelled reading passages. The Lexile Framework for Reading is a widely adopted analytic tool that provides a developmental scale for matching reader ability and text difficulty (Lexile Framework for Reading, 2007a). Stories were selected that corresponded to the Lexile values for the beginning, middle, and end of each grade level by entering the Lexile number into the *Lexile Book Search*, available on their website (Lexile Framework for Reading, 2007b). Books were retrieved and passages of approximately 300 words were randomly selected. In most cases, the books for the end of a grade level and beginning of the next grade overlapped. As often as possible, two non-fiction and two fiction passages were chosen for each level in order to appeal to a greater diversity of interests. The grade level accuracy for each selected passage was confirmed with the Flesch-Kincaid Grade Level. Each passage was given a descriptive title that reflected the topic and storyline in order to elicit topic interest.

Procedure

In the first session, children's reading ability, motivational orientation for reading, and attributional orientation for reading were assessed. The second session occurred two to three

weeks later. The researcher followed a script to avoid partiality of either passage condition group. Children were provided with a list of descriptive titles of four reading passages, read the titles aloud, then verbally ordered the titles starting with the one they liked the least and ending with the one they liked the most. Participants in the Interesting Passage condition were told they would read the passage they rated as most interesting, and children in the Non-Interesting Passage read the passage they rated as least interesting. This ensured a considerable discrepancy between the Interesting and Non-Interesting conditions, as effects are more likely when topic interest is either extremely high or extremely low (Flowerday et al., 2004; Mitchell, 1993). Passages ranging in difficulty were tested on a pilot group of children to confirm an appropriate level of difficulty that would elicit frustration and challenge with reading the passage fluently. Visual indications demonstrated that students were noticeably frustrated and challenged, although to varying degrees. Based on these observations passage difficulty was set differently using the Lexile framework for older and younger children as follows: 1) the passages were set at two complete grade levels beyond the current reading ability (assessed by the Woodcock Reading Mastery Tests – Revised) of the Grade 5 and 6 children; 2) passages were four grade levels beyond the assessed reading ability of the Grade 7 and 8 children. Reading materials that greatly diverge from students' interests as well as the presence of this degree of challenge are typical of elementary and middle school classroom reading experiences.

Each passage was halved and printed on two sheets of paper. Students were given the first page and told to read the story aloud as well as they could. This ensured that the challenge and frustration students experienced would be salient to both them and the researcher, and that children were actually reading the story. Students were timed while they completed the first page. Upon completion of page one, children were informed that there was a second part of the

story they could read if they wanted to, and were asked if they would like to read it. If the children wished to continue, they were told to read as much as they wanted and that they could stop at any point, and were timed until they stopped or completed the second page. It is important to note that all children who chose to continue reading also completed the second page of the story. Upon finishing, students completed a measure of their motivational and attributional state. All students were debriefed to ensure that they understood that the passage was supposed to be difficult to read and to inform them of the two experimental conditions.

Results

The Role of Topic Interest on Motivation and Attributions

Two mixed factorial ANOVA models were carried out on each of self-reported motivation and attributions for failure/difficulty before and after the challenging reading experience. The objective was to explore whether children's motivation for reading and attributions for failure/difficulty would shift following a challenging and frustrating experience with reading, and whether the child's interest in the passage would influence these changes. For both outcomes, the first repeated-measures within-subjects factor was time (before/after the reading passage) and the between-subjects factor was the reading passage condition (Interesting/Non-Interesting). In the case of motivation, the three subscales of the IMI-Reading (Interest, Sense of Competence, and Perceived Effort) formed a second repeated measures factor; for the second ANOVA model, the two attribution subscales (Internal, External) formed the levels of the second repeated measures factor.

Motivation. In order to determine possible changes in children's motivation for reading, the three subscales of the IMI-R (Interest, Sense of Competence, and Perceived Effort) were used as within-subjects factors. An overview of the results is presented in Table 5. As expected,

Table 5
Motivation for Reading and Attributions for Failure Before and After Reading a Challenging Reading Passage

	Interesting Passage (<i>N</i> = 28)		Non-Interesting Passage (<i>N</i> = 28)	
	Before <i>M</i> (<i>SE</i>)	After <i>M</i> (<i>SE</i>)	Before <i>M</i> (<i>SE</i>)	After <i>M</i> (<i>SE</i>)
Self-Reported Motivation for Reading				
Interest	2.79 (.14)	2.52 (.15)	2.70 (.14)	1.62 (.15)
Perceived Competence	3.25 (.12)	2.73 (.13)	3.27 (.12)	2.46 (.13)
Perceived Effort	3.22 (.13)	3.07 (.16)	2.96 (.13)	2.67 (.16)
Attributions for Failure/Difficulty				
Internal	2.71 (.12)	2.24 (.15)	2.66 (.12)	2.61 (.15)
Ability	2.45 (.16)	2.24 (.16)	2.14 (.16)	2.21 (.16)
Effort	2.76 (.15)	2.27 (.18)	2.96 (.15)	2.46 (.18)
Interest	2.93 (.20)	2.23 (.21)	2.87 (.20)	3.24 (.21)
External	2.46 (.12)	2.17 (.13)	2.21 (.12)	2.35 (.13)
Task Difficulty	2.60 (.15)	2.62 (.16)	2.13 (.15)	2.71 (.16)
Teacher/Researcher	2.33 (.13)	1.42 (.11)	2.30 (.13)	1.76 (.11)
Unfairness				

Note: Before = general self-reported motivation and attributions for reading. After = self-reported motivation and attributions immediately after a challenging reading passage.

children's motivation for reading in all three areas decreased significantly following the challenging reading experience: interest in reading, $F(1, 54) = 46.71$, $\eta^2 = .46$, $p < .001$; perceived competence, $F(1, 54) = 58.98$, $\eta^2 = .52$, $p < .001$; perceived effort, $F(1, 54) = 6.06$, $\eta^2 = .10$, $p = .017$. Therefore, after a failure experience with reading, children were less interested in reading, felt less positively about their reading abilities and competence, and also perceived themselves as exerting less effort.

A significant interaction between time and passage type was found for interest, $F(1, 54) = 16.59$, $\eta^2 = .24$, $p < .001$, with interest declining only when the reading passage was uninteresting. Interest in reading decreased from $M = 2.70$ ($SE = .14$) to $M = 1.62$ ($SE = .15$) in the Non-Interesting condition, while children in the Interesting condition maintained their interest ($M = 2.79$, $SE = .14$ to $M = 2.52$, $SE = .15$). Thus, children continued to enjoy reading

when it was personally interesting, despite the presence of challenge. A similar pattern was observed for perceived competence, with this subscale decreasing to a greater degree for children reading the uninteresting passage in comparison to children in the Interesting Passage condition; however, the interaction was not statistically significant ($F(1, 54) = 2.83, \eta^2 = .05, p = .099$).

Attributional style. A similar analysis was conducted to determine possible influences on children's internal and external attributions for failure/difficulty in reading as within-subjects factors. An overview of the means for both conditions can be found in Table 5. Children's attributions for failure to internal causes, which include ability, effort, and interest, significantly decreased after the inappropriate challenge, $F(1, 54) = 7.94, \eta^2 = .13, p = .007$. Significant interactions were obtained for both internal ($F(1, 54) = 5.33, \eta^2 = .09, p = .025$) and external ($F(1, 54) = 5.63, \eta^2 = .09, p = .021$) attributions when considering the interaction between time and the passage type. Following the reading passage, children in the Interesting Passage condition were less likely to attribute their difficulty to internal reasons ($M = 2.71, SE = .12$ to $M = 2.24, SE = .15$), while children in the Non-Interesting Passage group reported similar ratings for internal attributions in the hypothetical failure scenarios ($M = 2.66, SE = .12$) and after reading the challenging passage ($M = 2.61, SE = .15$). The same pattern was found for external attributions, with children in the Non-Interesting Passage condition reporting comparable attributions in the hypothetical ($M = 2.21, SE = .12$) and challenging reading situations ($M = 2.35, SE = .13$) with a slight increase, while children who read the interesting story were less likely to attribute their difficulty on the passage to external reasons ($M = 2.17, SE = .13$) in comparison to their hypothetical scenario responses ($M = 2.46, SE = .12$).

A post hoc analysis of the sub-categories of internal and external attributions revealed interactions between the Interesting and Non-Interesting conditions and time for internal

attributions to interest, $F(1, 54) = 14.46$, $\eta^2 = .21$, $p < .001$, and external attributions to task difficulty, $F(1, 54) = 5.35$, $\eta^2 = .09$, $p = .025$. As shown in Table 5, for children who read the interesting passage, internal attributions in all three areas (ability, effort, interest) declined. In contrast, children who read the non-interesting passage were *more* likely to attribute failure to interest and ability, and less likely to attribute failure to effort when compared to their attributional orientation. The only attribution that remained constant for the Interesting Passage group of children was task difficulty, which was also the most highly-rated attribution for these children in the challenging reading situation. Children in the Non-Interesting Passage condition were more likely to attribute failure to task difficulty when compared to their hypothetical attributions. Therefore, in a challenging reading situation, attributions are most likely to be reported as due to the task itself, in terms of task difficulty for both groups, as well as interest for children reading uninteresting texts.

Students were classified according to researcher observation as noticeably struggling ($N = 49$), struggling somewhat, although not exceedingly frustrated ($N = 4$) and as having very little difficulty (i.e., struggling with only a few words, but otherwise fluent) ($N = 3$). This was taken as evidence that the passages were of pronounced difficulty to the majority of participants. To ensure that the results were not due to the few participants who were not noticeably struggling, all above analyses were conducted again with only the noticeably struggling subsample ($N = 49$) and results were fully consistent with the above results that included all participants.

Persistence in a Challenging Reading Situation

As amount of time to read the passage did not significantly differ between the Interesting and Non-Interesting conditions or in terms of those that persisted versus those that decided to stop, the following analysis of persistence is based on the child's decision to continue reading the

second half of the passage or to stop reading after the first section. However, since the time to complete the passage can be considered as a measure of fluency, as expected, those that decided to continue reading took less time in seconds to read the first half of the story ($M = 91.39$, $SD = 24.18$) compared to those that did not continue ($M = 97.07$, $SD = 29.89$).

When considering all participants, approximately half (55%, $N = 31$) of children did not continue reading the passage. Significant differences emerged when comparing children who persisted with those that did not. Those persisting reported higher interest in the passage ($t(54) = 4.91$, $p < .001$), were less likely to attribute difficulty on the passage to internal reasons ($t(54) = -3.19$, $p = .002$), less likely to attribute difficulty on the passage to their effort ($t(54) = -2.18$, $p = .03$), less likely to attribute their difficulty on the passage to interest ($t(54) = -3.76$, $p < .001$), more likely to be younger ($t(54) = -3.22$, $p = .002$), and had a higher Woodcock Word Identification standard score ($t(54) = 2.27$, $p = .027$). Therefore, children who persisted demonstrated higher interest and more adaptive attributions in the failure situation. Those that were more likely to attribute their failure to internal characteristics were less likely to persist, demonstrating the possible negative effects of maladaptive attributional states in situations regarding academic challenge. Crosstabulations clarified the age differences in persistence as developmental, with 75% of 10 and 11 year olds, 40% of 12 year olds, 31.3% of 13 year olds, and 28.6% of 14 year olds persisting, $\chi^2(1) = 8.68$, $p = .034$. Finally, a significant association was found between persistence and experimental condition. Of the children in the Interesting passage condition, 57.1% continued to the second half of the passage, whereas only 32.1% of the children in the Non-interesting passage condition continued ($\chi^2(1) = 6.61$, $p = .01$).

Interesting passage condition. The majority (57.1%, $N = 16$) of children who read the interesting passage persisted, with 73.3% of Grade 5 and 6 children and 38.5% of Grade 7 and 8

Table 6
Reading and Motivation Scores According to Passage Condition and Level of Persistence in the Reading Task

	Interesting Passage		Non-Interesting Passage	
	Continued (<i>N</i> = 16) <i>M</i> (<i>SD</i>)	Did not continue (<i>N</i> = 12) <i>M</i> (<i>SD</i>)	Continued (<i>N</i> = 9) <i>M</i> (<i>SD</i>)	Did not continue (<i>N</i> = 19) <i>M</i> (<i>SD</i>)
Pre-Passage				
Interest	3.04 (0.61)	2.45 (0.94)	2.78 (0.92)	2.67 (0.64)
Perceived Competence	3.35 (0.67)	3.11 (0.74)	3.30 (0.32)	3.26 (0.60)
Perceived Effort	3.48 (0.41)	2.88 (0.79)	2.81 (0.84)	3.03 (0.62)
Woodcock Basic Skills	509.22 (12.50)	506.29 (14.85)	510.83 (9.79)	507.16 (13.59)
Post-Passage				
Interest	2.85 (0.73)	2.07 (0.95)	2.21 (0.68)	1.34 (0.38)
Perceived Competence	2.78 (0.69)	2.67 (0.82)	2.67 (0.72)	2.37 (0.52)
Perceived Effort	3.31 (0.62)	2.75 (1.10)	2.64 (1.05)	2.68 (0.72)

children persisting. T-tests confirmed that the children who persisted demonstrated higher pre-reading perceived effort ($t(26) = 2.66, p = .01$), reported higher interest in the passage ($t(26) = 2.44, p = .02$), were less likely to attribute failure on the passage to internal reasons ($t(26) = -2.40, p = .02$), and were less likely to attribute their difficulty on the passage to interest ($t(26) = -3.04, p = .005$). Again, children who persisted were more interested in the story and exhibited more adaptive attributions by not attributing their failure to internal causes, while those that discontinued reading demonstrated a more self-defeating attributional state. As shown in Table 6, the motivational orientation of participants that decided to continue reading consisted of higher interest, competence, and effort compared to those that did not continue reading.

Non-interesting passage condition. Despite the challenge and lack of interest in the passage, 32.1% of children ($N = 9$) persisted. T-tests demonstrated significant differences in whether the child persisted, with those continuing demonstrating higher interest in the passage ($t(26) = 4.34, p < .001$), less likely to attribute failure to external reasons in hypothetical failure situations ($t(26) = -2.05, p = .05$), less likely to attribute failure to task difficulty in hypothetical

failure situations ($t(26) = -2.22, p = .04$), and more likely to be younger ($t(26) = -2.39, p = .02$). Crosstabulations confirmed these age differences, as the majority of children aged 10 and 11 persisted (80%), while 16.7% of 12 year olds, 36.4% of 13 year olds, and none of the 14 year olds persisted, $\chi^2(1) = 8.84, p = .03$. As shown in Table 6, participants that decided to continue reading also had motivational orientations comprised of higher interest and competence compared to those that quit; however, children who continued perceived themselves as exerting less effort. It is possible that children who decided to continue are more skilled at reading, and therefore, do not feel they have to exert as much effort in order to succeed.

Discussion

Overall, the findings demonstrate that motivation for reading declines when children are given a story that challenges them above their ability level, particularly when the story is not personally interesting. Upon reading the challenging passage, children felt that they exerted less effort and reported motivational states indicative of declines in perceived competence for reading. This is consistent with several findings noting that challenging tasks undermine motivation and result in lower feelings of competence (Deci & Ryan, 1985; Schweinle et al., 2006; Turner & Paris, 1995). Children may have reported that they exerted less effort in order to protect their self-perceptions, as it is more adaptive to state that they put less effort into reading than to admit they tried hard and failed, as this would presume a lack of ability (Covington & Omelich, 1979). This was particularly true for children who reported low motivation after reading; compared to highly motivated children, children with lower motivation were more likely to attribute their performance to a lack of effort.

Motivation outcomes were especially problematic for children who read the non-interesting passage, as these children demonstrated a motivational state with considerable

decreases in all three components of motivation, and unlike children who read the interesting passage, reported significant declines in interest. Coinciding with Wade's (2001) findings, the presence of difficulty combined with a lack of interest negatively affected children's enjoyment of the task. On the other hand, children who read a personally interesting story maintained their interest, despite the frustration and presence of difficulty. Similar to Katz and colleagues' (2006) conclusion, interest is a possible protective factor in less than optimal, challenging reading situations. Interest in the topic motivated children to persist with reading and supported their enjoyment of the task, corresponding with Schweinle and colleagues' (2006) finding that students are more likely to tolerate challenge when the activity or topic is interesting. This is also similar to the findings of Vollmeyer and Rheinberg (2006), as they concluded that interest in an activity results in positive affect and evaluations of the activity. In this study, decreases in perceptions of competence and effort in the interesting passage group mirrored the declines in the motivational states of children who read the uninteresting story. Therefore, interest may not protect children against the negative impact of challenge on children's self-perceptions.

Children with adaptive attributions after reading reported higher motivational states after reading in terms of interest, perceived competence, and perceived effort. Adaptive attributions were especially apparent for children who read the personally interesting text, as these children were less likely to attribute their difficulty to internal characteristics in comparison to children who read the uninteresting story. Thus, it is possible that topic interest can buffer the negative effects of challenge on problematic internal attributions for failure. An interaction was also found between a maladaptive attributional style of attributing failure to internal causes and low self-reported interest after reading, which corresponds with research that has found negative

implications on motivation and task enjoyment for children who attribute failure to internal causes (Carr et al., 1991; Chan, 1994; Dweck, 1986; Pintrich et al., 1994; Weiner, 1986).

Significant changes between attributional orientations and states were found for children in the Interesting Passage condition, with considerable declines in attributing their difficulty with the passage to either internal or external causes. Schweinle and colleagues (2006) stated that individual choice and autonomy may have an impact on the experience and meaning of academic challenge. It is possible that children in the non-interesting passage condition felt less control with the reading task when told to read an uninteresting story, after rating the stories in terms of interest. On the other hand, children in the interesting passage condition could have perceived a sense of control with the task because they were able to select and read a personally interesting story. This positive affect and feeling a sense of control with the task may have protected children against feelings that they were failing, and as a result, children may have reported fewer attributions to external causes. Overall, internal and external attributions remained stagnant for children who read the uninteresting passage when comparing their hypothetical and post-reading responses. It is clear that for children reading a personally interesting story, their value systems and beliefs about how they feel when reading were engaged; however, children reading an uninteresting story may disengage due to disinterest and frustration, and feeling a lack of autonomy or control with the reading task.

Although interest is not a commonly measured attribution, a lack of interest is a viable reason for failure or difficulty with a reading task. Given a classroom of uninterested and disconnected readers, interest is a pertinent reason for this disengagement, and thus possibly contributes to children's difficulty or failure with reading. In considering children's attributional orientations, interest was the most strongly rated attribution for failure amongst effort, ability,

task difficulty, teacher unfairness, and interest. Children are often required to read uninteresting stories in school and they believe that a lack of personal interest with the material is a genuine reason for their failure or difficulties with reading in the classroom. Attributions for interest decreased for children who read the interesting passage, while interest continued to be the most reported attribution for children who read the uninteresting story. Consequently, particularly when children are required to read an uninteresting, challenging story, they are likely to believe that a lack of interest is a primary cause of why they did not do well.

After reading the excessively difficult passage, children who read the interesting passage indicated task difficulty and effort as the most strongly rated attributions for difficulty; in contrast, children who read the uninteresting passage rated interest, task difficulty, and effort most strongly, in that order. In the domain of reading, task difficulty and effort are both adaptive attributions for failure, as task characteristics are external and beyond the readers' control, while effort can be modified in future situations; therefore, these attributions should not negatively impact children's self-esteem or competence perceptions (Marsh, 1986; Weiner, 1986). It can be argued that attributions to interest in the case of the challenging story is similar to task difficulty, as children cannot change their personal interests and the choice of story, particularly when the story is uninteresting, which is often beyond their control.

Interactions between perceptions of competence and attributions shed some light on why some children responded with a lack of attributions of their difficulty to any cause. Consistent with past research, children who attributed their failure to internal causes, and ability in particular, reported lower perceived competence (Anderman & Midgley, 1998; Carr et al., 1991; Chan, 1994; Dweck, 1986; Núñez et al., 2005; Shell et al., 1995; Weiner, 1986). However, results are not consistent with Weiner's (1986) suggestion that external attributions of failure can

enhance self-concept, as children who were more likely to attribute failure to external causes had lower perceived competence. The overall pattern for those with high perceived competence was an absence of attributions of failure to both internal and external causes. It is likely that due to positive perceptions of competence in reading, these children were less likely to evaluate their performance on a challenging reading task as failed; thus, they responded that both the internal and external stated causes of their failure were “false.”

Persistence in a Challenging Reading Situation

Although Sullivan and colleagues (2006) found that all participants persisted in a challenging mathematics situation, which they attributed to artificial testing that did not reproduce a typical classroom situation, in this study it was evident that there was a divide between students that persisted and those that gave up. It is possible that students responded more strongly to the challenges in reading, as children may not experience failure in reading as often as they do in mathematics, and therefore, this challenge may intensify the effect on children's intrinsic feelings about themselves as readers. As a result, this experience may have activated children's fear of failure, which is common in challenging academic tasks and is associated with declines in motivation and effort (Elliot, 1999; Schultheiss & Brunstein, 2005; Turner & Paris, 1995; Urdan & Midgley, 2001; Vollmeyer & Rheinberg, 2006).

Children who persisted demonstrated more adaptive attributional states for their performance on the passage with fewer attributions to internal characteristics, indicating that adaptive attributions may buffer the negative effects, especially on effort, of challenging academic situations. Children with adaptive attributional orientations with fewer internal attributions exhibited higher perceived effort. Although attributions to effort in failure situations are recognized as adaptive in terms of motivation (Dweck, 1986; Grant & Dweck, 2003),

children who were less likely to attribute failure to their effort were more likely to persist, showing a discrepancy in the benefits of this attribution in challenging situations. If children feel they are failing because of a lack of effort, they may decide to quit rather than exert more effort if it is likely that they will continue failing, which may benefit their self-perceptions but impedes their actual effort. Consistent with past research, it is likely that children with adaptive attributional orientations with fewer internal attributions for failure exert more effort and have greater persistence and engagement on challenging tasks (Struthers & Perry, 1996; Weiner, 1986). Similarly, children with maladaptive, self-defeating attributions for failure to internal causes reported low perceived effort and were less likely to persist and exert effort in a challenging situation (Carr et al., 1991; Núñez et al., 2005; Shell et al., 1995; Weiner, 1986). If children decide to decrease their effort because they feel that their efforts in challenging situations are useless, it is less likely that they will experience success and build their self-perceptions of their ability, contributing to destructive internal attributions for failure.

Younger children were more likely to persist, which may be partly due to their higher overall intrinsic interest and motivation for reading and learning (Baker & Scher, 2002) that may generate resiliency against challenging reading experiences. This was particularly apparent in the uninteresting reading situation, as none of the oldest children persisted, while 80% of the youngest children persisted. It is evident that topic interest is increasingly important to facilitate engagement in reading tasks for older children, especially due to the downward trend in interest in reading with age. Children with higher reading ability were also more likely to persist, which corresponds with research noting that high-achieving individuals prefer challenging tasks (Schultheiss & Brunstein, 2005), while those with lower achievement and struggling readers are

not motivated by challenge and often lack motivation to exert effort in these situations (Schultheiss & Brunstein, 2005; Sideridis, 1992).

Children who read the personally interesting passage were almost twice as likely to persist compared to children who read an uninteresting text. This corresponds with the findings that high topic interest has positive effects on persistence and effort (Ainley, Hidi, et al., 2002; Ainley, Hillman, et al., 2002; Hidi, 1990; Renninger & Hidi, 2002; Schiefele, 1996; 2001; Wade, 2001), and confirms the findings of Ainley, Hillman, and colleagues (2002) that children are less likely to persist when reading texts with low rated interest. Similar disengagement and lack of involvement in uninteresting tasks has been found by several researchers (Ainley, Hidi, et al., 2002; Ainley, Hillman, et al., 2002; Pintrich & Schrauben, 1992; Sullivan et al., 2006). Furthermore, in both conditions, those that persisted reported higher interest after reading the passage. Although Hidi and Renninger (2006) stated that situational or individual interest is necessary for individuals to persist for an extended period of time, in this study the reading task was relatively brief. Therefore, topic interest may have been sufficient for some children to continue reading, while it was noticeable that a lack of interest in the topic resulted in a decision to quit, especially amongst older children. Though interest may buffer some of the negative effects of a less than optimal reading situation, it is clearly not effective for all children. The powerful impact of interest in academic tasks is apparent here, as the majority of children decided not to persist on an uninteresting task, even though it was brief.

Overall, the motivational orientations of those that persisted in the interesting condition consisted of higher interest, perceived competence, and perceived effort for reading. These children also demonstrated higher interest and perceived effort after reading the passage. This corresponds with several findings that children with high initial motivation for reading and topic

interest are more likely to persist and demonstrate positive affect after reading, even in challenging situations (Ainley, Hidi, et al., 2002; Ainley, Hillman, et al., 2002; Alexander & Murphy, 1998; Renninger & Hidi, 2002; Vollmeyer & Rheinberg, 2006). Positive self-efficacy and competence perceptions also lead to persistence in challenging tasks (Bandura, 1993; Schunk, 1985).

Several theories of motivation note that challenging tasks enhance children's motivation (Pintrich & Schunk, 2002; Stipek, 1998; Turner & Paris, 1995); however, the question that remains is how much challenge is too much? Appropriate levels of challenge will vary for children according to individual and contextual characteristics, including their ability level and motivational orientation. In future research, random assignment of children to reading passages that range in difficulty in comparison to their reading level will help to determine appropriate challenge in order to maximize motivation and persistence. It would also be useful to have children rate how challenging the story was for them after reading in order to better understand how the level of perceived challenge may impact motivation and persistence for children with a variety of motivation and ability profiles.

Finally, several researchers have noted the methodological weaknesses of measuring interest in the task after a reading passage. Reported interest can be confounded by changes in interest levels during the passage, knowledge gained from reading the texts, and involves reflective judgements (Alexander & Jetton, 1996; Hidi, 2001). Several studies have attempted to use behavioural measures of interest (i.e., attention/engagement) during the reading passage, or have children respond to affect measures throughout the text (e.g., Ainley, Hidi, et al., 2002; Schiefele, 1996). In future research, it may be useful for children to rate how interesting they expect each title to be before reading (e.g., Ainley, Hidi, et al., 2002) in order to understand the

extent of the child's personal interest in the topic. Although children rated a particular title as most interesting, the topic may not have been personally interesting, and simply the best of available options. However, this does indicate that children's motivation and persistence are enhanced when they are able to select a topic that interests them, and thus, in line with the self-determination theory (Deci & Ryan, 1985), it may be more important for children to feel autonomy and control in choosing a topic than for the topic to be highly personally interesting.

Conclusion

These findings lend support to the notion that developmentally inappropriate challenges in reading threaten and undermine children's motivation (Deci & Ryan, 1985; Schweinle et al., 2006; Turner & Paris, 1995; Wigfield & Eccles, 2001), including their interest, sense of competence, and perceived and actual effort. However, this negative impact of challenge may be less problematic if the child is personally interested in the topic of the story, and therefore, topic interest has the potential to protect certain children against less than optimal reading experiences in helping to sustain motivation, adaptive attributions, and persistence. Although interest does not always enhance learning, interest is one essential resource for students in academic situations (Hidi, 1990), and may also be an adaptive and highly relevant attribution in challenging situations. In creating optimal challenging activities for reading, it is important that the task is both suited to children's abilities and is also personally interesting.

A multi-theoretical perspective of motivation and attributions facilitated our understanding of the impact of challenge on several components of intrinsic motivation and attributions for reading. The measurement of general motivational orientations and task-specific motivational states demonstrated the changing and dynamic nature of motivation and attributions. Together with self-report, the integration of a behavioural theoretical and

methodological approach provided a more inclusive measurement of children's responses to a challenging reading task. The multi-methodological approach of the following study integrates qualitative methods to examine children's descriptions of their emotions and motivation in various reading contexts.

STUDY III: QUALITATIVE ANALYSIS OF CHILDREN'S PERCEPTIONS AND FEELINGS ABOUT READING AS A REFLECTION OF THEIR MOTIVATION

Qualitative research is becoming increasingly important in the study and understanding of motivation, especially in terms of the relationship between children's emotions and their motivation and achievement. This study aimed to enhance our current understanding of achievement motivation through a qualitative approach, acknowledging children's descriptions of their feelings and experiences with reading. The overall objective of this methodological approach is to better understand how the emotions children experience in the context of reading contribute to their motivation and learning.

As stated by Jarvenoja and Jarvela (2005), it is important to shift our focus from the structure of motivation to the processes and meanings of individuals' experiences. Similarly, a shift from a unidimensional assessment of children's motivation to a focus on their perspectives about reading, motivation, and classroom practices will be advantageous to our understanding of motivation in the classroom context. A qualitative approach can also challenge and add to pre-existing assumptions about the definition of motivation and the efficacy and completeness of theories and measures of children's achievement motivation.

The study of motivation remains theoretically fragmented and detached from educational practice due to a dependence on quantitative methodologies that often separate the individual from the educational context. In order to recognize how motivation influences children's learning, it is critical to understand children's subjective perceptions of reading and achievement. Interviewing is a powerful method for gaining a better understanding of the interaction between contextual factors and children's self-regulated learning and motivation, especially in terms of how students construct their perceptions and understandings (De Groot, 2002). This approach

also allows for the examination of cognitive, affective, and contextual influences on motivation and behaviour, recognizing motivation as a changing characteristic (Dörnyei, 2000). A more situational or contextual understanding of motivation can be used to answer questions about the reasons and processes of motivated behaviour (Patrick & Middleton, 2002). This is especially important, as children's perceptions of their motivation may be quite different than teachers' or researchers' understandings of children's motivation.

As the importance of qualitative research in the field of motivation and methodology was discussed within the introductory review of motivation measurement, this review focuses on the relationship between children's emotions and achievement motivation. Several researchers have noted the connection between students' emotions in academic contexts and their motivational orientations, learning strategies, and academic achievement (Bergin, 1999; Pekrun, Goetz, Titz, & Perry, 2002; Schutz & DeCuir, 2002). This is especially true in research that has focused on contextual or situational understandings of motivation, and research on the affective component of interest (Hidi & Renninger, 2006). As quantitative methods have shown a link between motivation and cognitive engagement and strategies with tasks, it is also important to consider how and why children are motivated, and children's perceptions of what motivates them to engage and persist (Patrick & Middleton, 2002). Self-regulation of emotions, motivation, and cognitive processes is required in order to cope with the demands of the learning situation and social/environmental context. Qualitative methods have been used in the study of self-regulation and motivation to better understand students' thoughts and emotions during and after completing tasks, interpretations of aspects of the task that can enhance or decrease motivation, and rationale for their behaviour within the task (De Groot, 2002; Patrick & Middleton, 2002). For this reason, the experience of a challenging academic task was selected as a starting point for the interviews.

Emotions can be self-referenced or social-referenced, and can also relate to the task and context (Jarvenoja & Jarvela, 2005). In particular, Jarvenoja and Jarvela (2005) found that emotions related to the self, which included personal motivational beliefs, individual interests, and thoughts about the learning context, are important for performance, especially at the beginning of a task. The authors concluded that although self-referenced emotions are influential, it is also critical to understand students' emotions as they relate to the context and task, such as domain or task-specific interest, importance of the task, instructional practices, and the classroom context.

Emotions experienced within a learning situation are influenced by children's perceptions of themselves, motivation, and situational and social factors, as well as past learning experiences (Pekrun et al., 2002). Pekrun and colleagues (2002) stated that emotions can activate, maintain, or reduce motivation. Children's motivation and behaviour are transformed by the ways in which children process information based on their emotions towards the self and context. Motivation, goals, and emotions are interconnected, such that emotions can affect students' motivation and goals, while goals direct thoughts, behaviours, and emotions. Motivation research has focused on the interaction between goals and constructs such as motivation and emotion, and particular emotions experienced in relation to goals such as anxiety, pride, shame, and hope (Schutz & DeCuir, 2002). Pekrun and colleagues (2002) found that positive activating emotions, including enjoyment, pride, and hope, were positively correlated with students' interest, intrinsic and extrinsic motivation, and self-reported effort, and also predicted higher academic achievement. On the other hand, boredom, hopelessness, anger, and anxiety were negatively correlated with intrinsic and extrinsic motivation, interest, and effort, and predicted lower achievement. Pekrun

and colleagues (2002) concluded that boredom and hopelessness in particular tend to deactivate further behaviour and goals, and are likely to be harmful for motivation.

However, the relationship among emotions, motivation, and achievement is complex, in that some positive emotions, such as relaxation, can deactivate children's motivation through disengagement, or strengthen motivation through reinforcing academic behaviours. Similarly, negative emotions including anger and anxiety can reduce motivation due to a lack of interest or enjoyment, but can also strengthen extrinsic motivation, such as overcoming challenge or avoiding failure through increased effort (Pekrun et al., 2002). Likewise, in his discussion of emotions related to interest, Bergin (1999) states that both positive feelings of happiness and negative feelings, such as anger, can contribute to interest in learning.

As previously stated, qualitative methodologies allow for consideration of aspects of the context in the study of motivation. Ryan and Deci's (2000) self-determination theory concerns the importance of the social and classroom context for sustaining or undermining children's motivation and achievement. Children's innate needs for competence, autonomy, and relatedness must be satisfied in order for motivation to be enhanced and maintained; however, existing pedagogical practices in reading may not be satisfying, and may even be undermining, children's needs in these areas. Children's emotional reactions and perceptions of their experiences can help educators create a more positive and effective reading environment based on students' varied interests, reading abilities, and backgrounds. Insight into how current reading instruction impacts motivation through children's own descriptions can provide an authentic understanding of motivation and achievement in classroom contexts, contributing to both educational practice and theories of motivation.

Method

The overall goal of the interviews was to increase knowledge about children's motivation for reading and how this may be connected to performance through examining children's individual perspectives and descriptions. More specifically, additional goals of the interview were: 1) to understand the contexts that encourage or hinder children's motivation for reading; 2) to describe the emotions experienced during successes and difficulties with reading; 3) to better understand how children verbalize their motivation to determine the effectiveness of the Intrinsic Motivation Inventory (IMI) self-report measure of motivation.

Participants

All participants were categorized based on their self-reported motivational orientation using the IMI subscales of Interest, Perceived Competence, and Perceived Effort as having low, high, or mixed motivation. Low motivation was characterized by below mean scores on all three components of motivation, and the high motivation group included children with scores above the mean on all three components. Mixed motivation characterized students, for example, that had above average competence and effort, but below average interest. Standardized scores of the Word Attack and Word Identification subtests of the Woodcock Reading Mastery Tests were averaged to group students into low (average below 100) and high (average above 100) reading achievement.

Purposeful sampling was used to select 17 students (10 female and 7 male) in Grades 5 through 8 that represented each of the six motivation-achievement profiles, and that were also perceived to be open and comfortable to speak about their motivation and experiences. Students in the low achievement group had a standardized reading achievement score range of 74.0 to 96.5, and students in the high achievement group ranged from 100.5 to 112.5. Gathering

Table 7
Interview Participant Profiles

Name	Grade	Achievement		Motivation		
		High	Low	High	Mixed	Low
Michelle	6	X		X		
Jeffrey	6	X		X		
Katherine	8	X			Low I, High C & E	
Ken	7	X			Low I, High C & E	
Naomi	5	X			Low E, High I & C	
Jack	8	X				X
Darlene	7	X				X
Josh	6		X	X		
Amanda	8		X	X		
Mary	6		X	X		
Craig	7		X		Low I, High C & E	
Allison	7		X		Low I & E, High C	
Bryan	8		X		Low I & E, High C	
Rachael	6		X		Low I & C, High E	
Elizabeth	6		X			X
Thomas	5		X			X
Jenn	8		X			X

Note: For mixed motivation, I = Interest, C = Perceived Competence, E = Perceived Effort.

information from students with differing profiles is important as variation not only allows for a deeper understanding of motivation, but also leads to extensive strategies to assist educators in motivating a broader range of children. Participant characteristics are included in Table 7. The names of all participants have been randomly changed to protect confidentiality and anonymity.

Procedure and Analysis

Children were asked to describe their feelings and experiences with reading during structured interviews. The interviews were conducted immediately after participants struggled with a challenging reading passage (see Study II). The interview began with discussing how children felt about this experience: “How did reading that hard story make you feel?”; “Why do you think you had trouble reading it?”; and “What do you usually do when reading is hard?” Other interview questions encouraged students to describe their feelings and reading

experiences: “When do you enjoy reading?”; “When do you do well/best at reading?”; “How does doing well at reading make you feel?”; “How do you feel about reading?”; “When do you try hardest at reading?”; “Are there times when you put less work into reading?”; “When do you feel best about your reading ability or how well you can read?”; and “What could teachers do to make reading more fun?”. Interviews were taped and transcribed.

In order to set aside biases and existing knowledge about the particular students, the interview transcriptions were analyzed separately from the quantitative data and any identifying information. Transcripts were read through in their entirety to acquire a general sense of children’s descriptions of their motivation and potential themes. Transcriptions were then organized by question, and all responses to each question were read and grouped into themes that could describe the structures within children’s motivation and the various responses. The aim of this analysis was to categorize children’s responses in terms of different components of motivation and distinct emotional reactions towards reading. As a result of the type of questions asked, central themes were consistent with a portrait of children’s motivation within the interest, perceived competence, and perceived effort components. However, additional themes were evident, and were retained for descriptions of motivation and emotions that are not accounted for by these components. Multiple examples are provided in order to increase the validity of the analysis. After coding and assigning responses to the apparent themes, patterned differences and trends in the responses were compared to individual children’s motivation and achievement profiles. As one goal of the analysis was to examine the vocabulary that children use to describe their motivation in terms of interest, perceived competence, and perceived effort, responses were analyzed to search for expressions or feelings corresponding to these categories, and to create a cohesive but extended definition of these constructs.

Results and Discussion

Results are first discussed in terms of children's responses to the challenging reading task and the impact of topic and individual interest on motivation. Perceived competence and perceived/actual effort are then considered in depth to discern how children verbalize these areas of motivation, and the associated emotions. This is followed by an analysis of the items within the Interest, Perceived Competence, and Perceived Effort IMI subscales, and the fit of children's motivation vocabulary with keywords in the measure.

Challenging Reading Context and Motivation

Children responded in various ways to reading the challenging passage, with patterns emerging based on motivation and achievement profiles. The general trend for high achieving students was a positive response to the challenging reading task, noticeably due to high self-efficacy with reading and effective self-regulatory strategies. For example, Naomi stated that she is "pretty confident in reading pretty hard stories... so I felt pretty good" (high interest/competence). Jeffrey also mentioned that reading the challenging story "Felt fun. I like reading hard... words, 'cause it makes me feel good. 'Cause if I like read the word correctly, it just makes me feel smarter" (high motivation). Similar to the findings of Pekrun and colleagues (2002), it is evident that some children feel a sense of pride when they are able to read the difficult story, which increased their motivation for reading and would likely enhance their overall reading performance.

In most cases, competence was enhanced for highly motivated children, regardless of reading ability. Many low achieving students with high motivation responded positively to the challenging reading task through discussing how the difficult words could improve their ability. Mary stated that "I thought it was kind of interesting to read a hard story because like it helps me

with how I pronounce some words that are hard... It made me feel like I could read better than I usually do.” Similarly, Josh mentioned that the challenging story made him feel “pretty good... because it wasn’t that hard. It wasn’t as hard as I expected.” Thus, if motivation is intact, low achievers are more likely to respond positively to challenge as an opportunity to develop skills and competence, showing a mastery goal orientation of increased self-concept during difficult tasks (Sullivan et al., 2006).

On the other hand, several students responded that the challenging story had a negative impact on their interest, which was particularly true for low achievers with low motivation. Rachael felt “bored, ‘cause it was a hard story to read,” while Thomas agreed in stating, “I don’t enjoy it as much as I would ‘cause I don’t understand it.” Similar to the findings of Schweinle et al. (2006) regarding challenge as a threat to self-efficacy, low achievers with low motivation responded to the challenging story with negative feelings of competence. Jenn felt “sorta down, like I’m not very good at reading.” This was even true for low achievers with high perceived competence in reading. Bryan reported that “it makes me feel like stupid, like I haven’t seen [the words]” (low interest/effort), Allison felt “kinda sad about myself, ‘cause I couldn’t read it” (low interest/effort), and Craig felt “not very smart though, because some of the words were pretty hard” (low interest, high effort). This was also the case for one high achieving student with low motivation, Darlene, as she felt “kind of like I couldn’t read.” The primary emotions experienced by these children in this context were hopelessness and boredom, which corresponds with Pekrun and colleagues’ (2002) findings regarding the negative impact of these two emotions on motivation, interest, effort, and overall reading achievement. These students also display a performance goal orientation, wherein challenging experiences lead to negative attitudes towards self-concept and decreased persistence (Sullivan et al., 2006).

In terms of effort, low achievers tended to respond that reading the challenging story made them want to “read less of that story and go find an easier story that I can understand” (Thomas, low motivation). Similarly, Allison stated that it “kinda makes me want to read less, ‘cause you know, it doesn’t make you feel good to have, not pronouncing the words right” (low interest/effort, high competence). These responses support Pekrun and colleagues’ (2002) finding that feelings of hopelessness relate to a decrease in effort.

Thus, children experience various emotions during challenging reading tasks, which can impact their motivation, interest, and effort, and likely their performance on the task. These emotions were strongly related to children’s intrinsic motivation, with highly motivated children more likely to respond positively to the challenging task, regardless of ability level. Similar to the findings of Jarvenoja and Jarvela (2005), self-related emotions, such as enjoyment and pride, affected children’s behaviour; however, feelings pertaining to the task itself were also essential to children’s motivation and performance with the task, such as the decision to exert less effort.

Topic and Individual Interest

Most of the children that participated in the interviews read the interesting story during the challenging reading task. Children were asked whether it would have made a difference in how they read the story if they had read a less interesting passage. Participants were also asked later why they might be more successful when reading interesting stories. The majority of children stated that a less interesting story would have a negative impact on their interest and effort, and that interest and effort are closely related during challenging reading tasks. This corresponds with De Groot’s (2002) findings that intrinsically interesting material is related to increased attention and effort, while students have difficulty regulating their learning during boring tasks. For example, Josh stated that “I was more interested in it, so I read more of it than I

had to” (low achievement, high motivation), while Bryan, who read the non-interesting story, stated that “If it was interesting, I would’ve put more effort into it, but it wasn’t, so, just like get through it and that’s it” (low achievement, high competence, low interest/effort). Concerning reading a less interesting story, Jeffrey stated that, “I would’ve tried the same, but if it sounded boring I wouldn’t read the next page” (high motivation, high achievement), and Michelle said, “I wouldn’t look forward to reading it, and I might even just give up on it” (high motivation, high achievement). Jenn, a low achieving and unmotivated reader, stated that she would put less effort into an uninteresting story because:

I wouldn’t really want to read, I’d like, oh my goodness I just want this over. ‘Cause you’re not really focused or anything like that. If it’s a good book you like want to finish it because it’s so good, you want to see what happens.

Children also mentioned that they would not care about an uninteresting story, and this would result in less effort. Amanda stated that she would be, “not really trying because I don’t really care about it” (low achievement, high motivation), and Katherine said, “I could care less if it’s a book I don’t really like” (high achievement, low interest, high competence/effort).

Some students even remarked that the story would have been more difficult had it been less interesting. For example, Craig believed “it would be harder I think, because I wouldn’t enjoy it” (low achievement, high competence/effort, low interest), while Mary said “I probably wouldn’t have read it that well” (low achievement, high motivation). Josh stated that he “would’ve only read the first page, and I probably would’ve had the same amount of trouble with it, but wouldn’t have read as much.” When asked why he would have stopped, Josh responded, “Because I would’ve been bored” (low achievement, high motivation). These results closely relate to Pekrun and colleagues’ (2002) findings that feelings of enjoyment are correlated with

increased interest, motivation, effort, and success, while boredom leads to negative motivational states and achievement outcomes.

Children responded that interesting stories relate to increased attention, focus, and persistence, and subsequent success, corresponding to the findings of Hidi and Renninger (2006) concerning situational interest. Interesting stories promote success because of increased attention: “I pay more attention to it, and not kinda wandering off and thinking of other stuff while I’m reading” (Michelle, high achievement, high motivation); “you’re more into the book and more into like what’s happening, so you try harder” (Darlene, high achievement, low motivation); and “it keeps your attention and you’re not just thinking that, uh, you can’t wait to get it over with” (Josh, low achievement, high motivation). Similarly, Katherine, a high achiever with low interest, stated that she is more successful with interesting stories:

Because I’m more like um it just interests me so you kinda want to read more and more and more. And it kind of sticks with you, like you remember the book. But if you’re reading something that’s not interesting, it’s like you don’t really care. So it’s like, it doesn’t really stick with you, so it’s just like you’re just reading the pages. But if it’s interesting, you kinda picture stuff, and it makes it more appealing.

Children also responded that an interesting story promotes success because of persistence to finish the story: “you wanna know how it ends” (Amanda, low achievement, high motivation) and “it starts really good, then you think, oh my goodness I can’t wait ‘til what’s gonna happen” (Jenn, low achievement, low motivation). Reading an interesting text promotes comprehension due to a pre-existing understanding of the words and topic, as Thomas said that he does better “‘cause I can actually read about something that I like, not just read something that I don’t even know and don’t understand” (low achievement, low motivation). These responses suggest that high ratings of topic interest are likely associated with increased persistence (Hidi, 2001).

Only two children stated that their interest in the story would not affect how they read, and these were both high achieving children with high interest in reading. Naomi stated that it would not make a difference “unless it’s really dreadfully boring” (high competence/interest, low effort). Katherine agreed in stating, “I’ll still read it because you never know if it’ll get better” (low interest, high competence/effort).

In discussing personal interest with reading, children were asked when they enjoyed reading the most. Most commonly, children enjoyed reading when they chose the book, and when they were alone or in a quiet place. For example, Jeffrey enjoyed reading “when I’ve got like a good book that I really like and I just go somewhere... to be on my own and read” (high achievement, high motivation). Bryan also stated that he enjoyed reading “Whenever I choose to read. Like, the teacher says, *okay, it’s time to read now*, you don’t really want to” (low achievement, high competence/effort, low interest). Children enjoyed reading the most when they felt autonomous and in control, which enhanced their motivation according to the concept of autonomy in the self-determination theory (Ryan & Deci, 2000). Similar to Pekrun and colleagues (2002), the emotion of enjoyment and the impact of this feeling on intrinsic motivation and subsequent achievement were particularly evident in children’s descriptions of their reading experiences.

Other children enjoyed reading the most at night, because “it keeps me from going to bed” (Josh, high motivation, low achievement), “because it’s very calm and peaceful” (Rachael, low achievement, low interest/competence), or because “I feel like I’m ready to just imagine things” (Jenn, low achievement, low motivation). Katherine also emphasized the importance of a comfortable and relaxed atmosphere, in stating that she enjoyed reading:

When I'm kinda in the mood to read and it's, there's nothing else to do, and it's like nice outside. I usually like go outside to read a book, and that's when I find it's easiest, when you're in a comfortable situation. (high achievement, low interest)

These responses illustrated a clear difference between topic or situational interest and individual interest; however, these forms of interest had similar effects on motivation and performance through the emotion of enjoyment, and its association with increased interest, effort, motivation, and achievement (Pekrun et al., 2002). Aligned with the findings of Jarvenoja and Jarvela (2005), children considered context- or task-related emotions, such as interest in the topic, as well as self-referenced emotions when deciding on their actions during academic tasks. Children were conscious of the impact that interest could have on their attention, persistence, and performance, and therefore, educators and parents should also recognize the importance of reading materials that appeal to students' interests.

Perceived Competence

Children often referred to their self-efficacy with reading when asked how they felt when they experienced success with reading. In comparing the responses of low and high achieving children, only the low achieving children reported feeling *smart* when they were able to read well. For example, Craig stated that it "makes me feel smart" (low interest, high competence/effort), and Allison said that it made her feel "happy sometimes, 'cause I feel smart, I guess" (high competence, low interest/effort). Low achievers also mentioned that doing well at reading caused them to think about their own reading ability. For example, Jenn stated that she felt "so good, 'cause I'm a bad reader, so I'm starting to get a little better at it" (low motivation), while Rachael said that it "makes me feel really good, because I know, actually, I'm not a good reader" (high effort, low interest/competence). Similarly, Amanda stated that it made her feel "good, because I think that reading is like a big part of what you need to know, so, I like when I

do well at reading” (high motivation). Low achievers valued these successful reading experiences and internalized positive feelings about their reading ability, often in terms of the emotion of pride.

High achieving children also had positive reactions to reading success, including a sense of pride and accomplishment, and the desire to continue reading. Jack expressed that he felt “good, ‘cause I’ve accomplished something” (low motivation), and Naomi stated that it “makes me feel proud that... I can read so well” (low effort, high interest/competence). High achievers with high motivation tended to increase their effort when they experienced success, as Jeffrey said, “I just want to keep trying,” while Michelle felt “pretty happy with myself. I’ll usually pick up another book if I feel that I’ve been doing well.” Ken also mentioned the importance of success, as he stated, “I don’t really enjoy reading, but when I do read, I like to know that I’m doing well in it” (low interest, high competence/effort). The emotions of pride and accomplishment were clearly related to positive effects on children’s effort and motivational state (Pekrun et al., 2002).

Children were also asked when they feel best about their reading ability, and responses related to either personal or social comparison contexts. Rachael emphasized the importance of achieving a personal goal to feel good about her ability, which was “when I read 20 pages in 25 minutes. That’s my best” (low achievement, low interest/competence). All three low achievers with low motivation (Elizabeth, Thomas, and Jenn) commented that they felt better about their reading ability “when I finish a book,” because “it makes me feel good because I accomplished something” (Thomas), and because if “I basically read the whole thing and I have it all done, I can read pretty well” (Jenn). Similarly, Darlene stated that she felt good “when I read something hard, or get through it” (high achievement, low motivation).

Several children referred to social comparison to determine their perceptions of their reading ability. Some children discussed feeling more competent when they received good grades, “I get a good mark on my book report. So I think, oh ya, maybe that extra effort was coming through” (Amanda, low achievement, high motivation), or positive peer evaluations, “if I had people listening to me though read a book, probably, it like, that might make me feel good” (Ken, high achievement, low interest). Naomi stated that she felt good when she could compare her abilities to those of her peers, as she felt good “after I finish a book with like words my level, so that I feel that I’m like caught up, that I can do stuff that other people can do” (high achievement, low effort, high competence/interest). On the other hand, two low achieving students stated that they felt best about their ability when they could not be judged by others: “when I don’t have to read out loud” (Bryan, high competence, low interest/effort); and “when reading in my head, because I don’t know if I mess up on pronunciations, as far as I know” (Josh, high motivation).

Children also expressed that some instructional practices resulted in feeling less competent, particularly for low achievers. These responses demonstrated an absence of relatedness, comfort, and security with reading at school, which, according to the self-determination theory, could have a negative impact on motivation (Ryan & Deci, 2000). For example, Allison wished that teachers would, “Maybe not like put so much pressure on you when you’re reading, like stop staring at you all the time, and make you feel like you’re really small” (low achievement, low interest/effort, high competence).

Thus, both self- and social-referenced emotions were operating in children’s perceptions of their reading abilities, with success in reading eliciting emotions such as pride, hope, and enjoyment. These emotions related to an increase in interest and effort, as well as intrinsic

motivation (Pekrun et al., 2002). Extrinsic motivators, such as grades and social comparison to peers, can also influence children's pride and hope in similar ways, having a subsequent impact on motivation and achievement.

Effort

Research has shown that children's perceived effort may be inconsistent with their actual effort. In order to understand children's perceptions of their own effort, children were asked when they put more and less effort into reading. Four categories emerged in children's responses: school-related, pressure, reading aloud, and interest.

The majority of children responded that they put more effort into reading in school-related contexts, such as assignments or tests, displaying a performance goal orientation. It was more common for low achieving children to mention school-related reasons for trying hard. Children tried their hardest because: "I want to do well on the [book] report" (Amanda, low achievement, high motivation); and "if I get a low mark it'll really bother me. So that's why I try hard at reading, like when it actually really counts. 'Cause that really makes me mad if I get a low mark" (Katherine, high achievement, low interest). Thomas (low achievement, low motivation) mentioned the difference between reading for school and reading for fun in stating:

I wanna get a good grade... If I need to do work or have a test then I'll keep reading, but if I just am at home or something and there's nothing better to do, I'll just for fun read.

However, some children also stated that they exerted less effort when reading for school. In most cases, children would exert less effort on school assignments if they had an extended period of time to complete it, "when we have a book report to do, or like, when we have a month to do it" (Jack, high achievement, low motivation), or if the assignment was small or unimportant, "If it's just for like reading little half page stories and you have to write... a

worksheet or something” (Amanda, low achievement, high motivation). Ken connected his lower effort on school assignments to a lack of interest, in stating that:

Sometimes, if it’s a school project, it again depends on if I like the book. Like sometimes, they’ll give you a book, and I’ll be like, I don’t want to read it, and I’ll sit there and I’ll just kinda skim it. I won’t really pay much attention and then I get in trouble and get a poor mark. (high achievement, low interest, high competence/effort)

Similarly, some children exerted more effort under pressure. Elizabeth tried hardest “when I wanna finish the chapter. It’s like, I gotta hurry up, I’m almost done” (low achievement, low motivation). Later, she mentioned that comparison to peers initiates pressure to try harder “in class, you know when everyone’s reading and then you do an assignment after you read a chapter. Everyone’s done, and you’re still on the same page.” Jack also stated that he puts in more effort “when I have a small amount of time to read it” (high achievement, low motivation).

Children also stated that they tried hardest when they have to read aloud in front of their class in order to avoid embarrassment, which integrated a performance goal of fearing to appear incompetent in front of others. These students exerted more effort in this context because: “I don’t wanna make mistakes and then get embarrassed” (Michelle, high achievement, high motivation); “you don’t want to make mistakes, you want to kind of make you seem better in front of other people” (Allison, low achievement, high competence, low interest/effort); “everybody can hear me, if I mess up, it’s embarrassing” (Josh, low achievement, high motivation); and “so then someone can’t say, oh I know that word and you don’t” (Jenn, low achievement, low motivation). Children also listed this as a reason for exerting less effort when reading alone, as Craig stated that he tried less “at home, because there’s nobody around to laugh when I say like a word wrong” (low achievement, low interest, high competence/effort), and Josh remarked that he tried less “when I’m reading in my head, because nobody else can hear it” (low achievement, high motivation). These feelings of embarrassment related to children’s lack

of relatedness and security in the classroom, which likely impacted their motivation (Ryan & Deci, 2000). Although the emotions of embarrassment and anxiety are negative, Pekrun and colleagues (2002) explained that the negative emotion of anxiety can strengthen children's extrinsic motivation to exert more effort in order to avoid embarrassment or failure.

Finally, students stated that they put more effort into reading when the book was interesting, relating to the impact of feelings of enjoyment on effort (Pekrun et al., 2002). For example, Rachael tried harder "because there's more stuff going on and like, if there's more stuff going on it will make you wonder what's going to happen and when" (low achievement, high effort, low interest/competence). Likewise, children exerted less effort "when it's really boring then, I just don't put effort 'cause I feel, why am I reading this? I don't enjoy it" (Naomi, high achievement, low effort), and "when I'm not interested in reading, like there's times when I'm into reading, like I'm just in the mood to read, then there's others where it just doesn't click" (Katherine, high achievement, low interest). This was also connected to when children were told to read, as Craig remarked, "Like my mom says, *read this chapter*, or something. Then I'm like, I don't want to read it, because it's boring" (low achievement, low interest).

Children's responses demonstrated the importance of task- and context-related emotions in the decision to exert effort and persist (Jarvenoja & Jarvela, 2005). Children consciously considered multiple aspects of the context and task, and the emotions elicited impacted their motivation and performance. Children exerted more effort when completing tasks for grades or to avoid failure, but also for self-related reasons, such as to enjoy an interesting book.

External Validity of Keywords used in the IMI

A content analysis was used to compare the keywords in the subscales of the Intrinsic Motivation Inventory (IMI) to children's interview responses relating to their motivation for

reading. First, the keywords representing the various components of motivation (Interest, Perceived Competence, and Perceived Effort) were extracted from the test items within each of the IMI subscales. These keywords were searched for within the entirety of the interview transcripts for each child. Other words that children used to describe their motivation within these three components were extracted and the frequency of these words was determined. Coding was completed by myself and an undergraduate research assistant, and frequency of keywords and additional keywords were compared to ensure valid categories and accurate frequencies. Results of the analysis of agreement for all 23 keywords combined revealed an almost perfect agreement ($\kappa = 0.91$, $P_o = 0.96$, $SE = 0.02$). The 95% confidence interval of kappa was .87 to .96. Kappa values for each of the 23 keywords ranged from 0.61 to 1.00 ($SE = 0 - 0.32$). Agreement ranged from .82 to 1.00. In each case of a discrepancy in agreement, the interviews were re-examined to verify frequency.

Interest. Children most often used the word “interest/interesting” to describe their enjoyment with reading. Other keywords included “enjoy/enjoyment”, “care/caring”, “fun/fun to read”, “appealing”, “like”, “cool/cool to read”, and “exciting”. Children also used expressions such as “into the book”, “keeps your attention”, “want to read more”, “feel like you’re... in the story”, “gives you that little bit of something”, and being “in the mood”. In terms of being disinterested, children often qualified the terms above in a negative way (i.e., “not interested”), or used the word “boring/bored”.

In the Interest subscale of the IMI, three questions contain “enjoy/enjoyable”, two questions include “fun”, one question refers to “interest/interesting”, and one question contains “like”. The final statement is “If I could choose what to do right now, I would read a book”, which was not included in this analysis due to an absence of searchable keywords. As shown in

Table 8, the keywords “interest/interesting”, “fun”, and “like” were well represented in the interviews, with at least 14 of the 17 children mentioning these words in discussing their interest. “Enjoy/enjoyable” was referred to by seven of the children. The most frequent word not contained in the IMI was “care/caring”, mentioned by three children. Therefore, the Interest subscale of the IMI effectively represented children’s vocabulary in describing their interest and enjoyment with reading, and demonstrated external validity with this population of children.

Perceived competence. Children expressed their self-efficacy of their reading ability with the words “confident”, “smart/smarter”, “proud”, “feel good”, “feel happy/happy with myself”, and “accomplish/accomplishment”. Children also stated that they “feel like I could read better than I usually do” or “feel that I’ve been doing well”. In terms of negative perceptions of competence, children stated that they “feel stupid”, “like I couldn’t read”, or “sad about myself”.

Of the six questions in the IMI Perceived Competence subscale, three contain feeling “good”, one reading or doing “well”, one reading “easily”, and one feeling “skilled” (see Table 8). All children mentioned feeling “good” in the context of discussing their reading ability, while eight of the children discussed feeling or doing “well”. None of the children discussed “easily” reading something, although two children mentioned an enjoyment of “easy” books. Zero children indicated feeling skilled. Of the keywords that are not in the IMI subscale, four children reported feeling a sense of “accomplishment” or feeling “accomplished”, and three children mentioned feeling “smart”. Perhaps the “skilled” item should be replaced with feeling “accomplished” or “smart”, since children more commonly associated these descriptors with their reading ability.

Perceived effort. The majority of children used phrases about trying or putting in effort to describe their effort with reading. Children stated that they “try harder/hard”, “try my best”, “try

Table 8

Comparison of Keywords used in the IMI Subscales to Children's Interview Responses (N = 17)

Keyword	Questions in IMI	Number of Children Stating Keyword				
		14+	5-13	2-4	1	0
<i>Interest/Enjoyment</i>						
Interest/Interesting	1/7	X (15)				
Fun	2/7	X (14)				
Like	1/7	X (14)				
Enjoy/ Enjoyable	3/7		X (7)			
Care/Caring				X (3)		
Cool				X (2)		
Exciting				X (2)		
Appealing					X	
<i>Perceived Competence</i>						
Good	3/6	X (17)				
Read/Do Well	1/6		X (8)			
Read Easily/Easy	1/6			X (2)		
Skilled	1/6					X
Accomplish/Accomplishment				X (4)		
Smart				X (3)		
Confident				X (2)		
Happy (with myself)				X (2)		
Proud					X	
<i>Perceived Effort</i>						
Try Hard/More	2/4		X (10)			
Put Effort/Extra Effort	1/4			X (4)		
Energy	1/4					X
Try my Best				X (4)		
Try to Understand				X (4)		
Stick With/To					X	

Note: "Questions in IMI" refers to how many questions out of the total number of questions in each of the subscales contain that keyword. Number in brackets is actual number that stated the particular keyword.

more", or "try to understand it". In using the word "effort", children phrased this as "put more effort into it", "put most my effort into it" or using "extra effort". Children also stated that they "stick to" reading.

Of the four questions in the IMI Perceived Effort subscale, two questions refer to "trying hard", one to "putting effort", and one to "energy". During the interviews, 14 of the 17 children

used the word “try” in association with their effort, with 10 children stating they would “try hard” or “try more”. Four children mentioned the word “effort” in their descriptions, while zero children referred to exerting “energy”. Children also used the phrase “try my best” and “try to understand” to discuss their effort, which may be more appropriate than the term “energy” (see Table 8).

As shown, the IMI was an effective measure of motivational orientation in terms of interest, perceived competence, and perceived effort for reading, and had acceptable external validity in this population. Some of the keywords in the IMI may not represent children’s motivation vocabulary, and could be replaced with more commonly used words. Piloting of additional test items would help determine the effectiveness of these keywords in the measurement of motivation for reading.

Conclusion

The objective of the interviews was to explore the reflective aspects of motivation in children’s descriptions of their emotions, both generally and in particular contexts. Furthermore, a closer look into how children verbalize their motivation was considered in terms of the self-report measure of motivation, and whether this measure effectively captures the words and expressions that children use to describe their motivation in these three components. It was expected that a better understanding of how children’s emotions are influenced by classroom contexts and instructional practices would enhance the conception of children’s motivation.

The results showed that children’s motivation reflected the components of interest, competence, and effort, and these constructs often co-existed in children’s responses. As stated by Patrick and Middleton (2002), qualitative methods may blur the distinctiveness of constructs used as separate entities in motivation surveys. It was also apparent that children’s motivation

was greatly influenced by the context and task, and children with similar motivation and achievement profiles tended to respond in the same way to certain reading situations, such as challenging tasks. Additional influences on motivation that were not accounted for within these three components included aspects of self-presentation or social comparison in children's assessments of self-efficacy, performance or mastery goals in guiding motivated behaviour, the interaction of personal and contextual goals, and the impact and importance of the context or task. Overall, children's emotional reactions overlapped, but were quite distinct, even for each individual child, showing the inability of survey or quantitative methods that average within and across children to account for the range of responses and perceptions and the dynamic nature of motivation.

The structured interview approach had a number of limitations. With a structured interview, it was difficult to develop a protocol that would flow during the interview. De Groot (2002) stated that structured interviews can become disjointed verbal questionnaires, which was evident in these interviews as many questions did not build on the previous one. Adjustments to wording and question order were made throughout the interviews, but more time should be devoted to developing an interview protocol in which questions evolve from prior questions. Although structured interview protocols result in an ease of comparison across students, a semi-structured interview format might be more conducive to better flow between questions and responses and more freedom in discussion.

As the interview was designed primarily to supplement the quantitative analysis, many of the questions related to the three components of motivation measured in the IMI scale. In this way, the interview was limited in the areas of children's motivation and learning that were explored and the results that were found. Children's previous experience with the IMI during the

session also may have affected their vocabulary in describing their feelings. The responses within this interview can aid in creating an improved interview protocol to better reach children's motivation without the existence of questions specific to certain components of motivation. Furthermore, aspects of motivation are unconscious, and it is likely that students were unaware of many of their emotional states during reading. To this effect, one student said, "I don't really pay attention to my emotions to reading" (Elizabeth).

Overall, the children revealed that motivation for reading may be diminished by many current instructional practices that undermine their needs for autonomy, competence, and relatedness. Furthermore, children commonly read texts unsuited to their reading level, and as shown by responses to the challenging reading task, this situation may be detrimental to many children's perceptions of their reading ability. Children's lack of focus during uninteresting reading activities also impacts both their motivation and performance, as they lack the focus and effort necessary to succeed and persist. The emotions that children experience during reading tasks, such as enjoyment and boredom, pride and hopelessness, and anxiety, impact their motivation, interest, effort, and performance. Children are able to articulate their opinions about reading and how this affects their motivation and emotions. It is important to provide children with opportunities to voice their opinions in both research and in the classroom, as motivation is likely to increase when children have a say in their own learning. If educators wish to motivate students to be lifelong readers, children's own perceptions and experiences should provide the foundation for classroom strategies.

The use of qualitative methods in this study was beneficial for uncovering informative and practical knowledge regarding children's experiences in educational contexts. The descriptive accounts of children's perspectives provide a meaningful awareness of children's

motivation, unattainable with self-report questionnaires. Moreover, a multi-theoretical approach, involving aspects of intrinsic motivation and affect, enhances our understanding of the connections among emotions, motivation, learning, and academic performance.

If they [teachers] just pick a book and be like, *Ok, every time you read a page you get a Smartie*, it's not going to make it fun, it's just gonna [make] you to want candy.
(Elizabeth)

CONCLUSION

Motivation is a critical factor in the achievement of students, and it is important that research on motivation contributes to pedagogical strategies and educational practices to enhance the learning experiences of students. This research has contributed to an increased understanding of the development and stability of motivation in elementary and middle-school children, as well as the relationship among motivation, attributions, and achievement in the domain of reading.

The use of diverse theoretical perspectives of motivation confirmed the value of a multi-theoretical approach to enhance our understanding of the complexities and context-specificity of achievement motivation (Baker & Wigfield, 1999; Murphy & Alexander, 2000; Pintrich, 2003; Yeung, 2004). The conception of motivation in this study took into account various theories and constructs of achievement motivation (Pintrich, 2003; Ryan & Deci, 2000; Snow & Jackson, 1993) and attributional theory (Weiner, 1986). This multi-theoretical approach advanced knowledge regarding how different constructs of intrinsic motivation work together (Murphy & Alexander, 2000) and contribute to learning and achievement in reading. The combination of conative and affective components (Pintrich & De Groot, 1990; Snow & Jackson, 1993) illustrated how children's emotions during reading experiences contribute to their beliefs about themselves as learners (Boekaerts et al., 2003), and their motivation and learning in future tasks.

The integration of self-report, behavioural, and qualitative methodologies supported the use of alternative methods to supplement self-report measures. A qualitative approach expanded the study of motivation towards a more holistic representation of children's descriptions and perceptions of motivation and learning (Pintrich, 2003). This approach also acknowledged the multiple personal, social, and contextual influences on motivation (Linnenbrink & Pintrich, 2002b; Schunk, 1999) through children's unrestricted responses about their reading experiences.

Children were able to create individual definitions of motivation and learning, broadening current conceptions of achievement motivation. Behavioural measures of effort also complemented self-report measures of children's perceived effort in assessing authentic effortful behaviour during a reading task.

Corresponding to the first objective outlined in the introduction, it was found that attributions are closely related to multiple components of intrinsic motivation in the domain of reading (Weiner, 1986). Children's attributions for success and failure with reading related to both internal and external factors. Internal attributions were further divided according to the stability or instability of the cause for reading performance. Children in this study reported a lack of interest in the task as the most common attribution for reading failure.

Another objective was to characterize the stability or change in motivation over time, as well as the consistency between general and situation-specific measures of motivation. Overall, children's motivational orientations of interest, perceived competence, and perceived effort were highly correlated between 2 time points 1-year apart, demonstrating the stability in motivation over time. Strong correlations were also evident between different components of motivation, revealing the interrelationships between different components within the construct of motivation (Murphy & Alexander, 2000). In this population, motivation begins to decline in the late elementary years, with the strongest declines occurring with the transition to middle school (Eccles et al., 1993). The measurement of motivational states after a challenging reading task demonstrated that motivation for reading can fluctuate depending on the learning context. Similarly, children's attributions for their reading performance may change depending on the context; moreover, the measurement of attributions was more reliable in a task-specific context.

Relationships among motivation, attributions, and achievement were examined to fulfill the objective of better understanding the interdependencies of these constructs both generally and specific to a challenging reading task. The components of motivation and particular attributions were found to be highly compatible, and it was evident that the children understood the interrelatedness between their motivation for reading and the causes for their achievement outcomes. Competence was found to be particularly important for the development and maintenance of reading-related skills throughout late elementary and middle-school (Marsh, 1992; Schunk & Pajares, 2005), while interest was more influential for younger children's reading achievement (Baker, 2003; Chapman & Tunmer, 1995; 2003).

The final objective of this research was to use a qualitative approach to develop a better understanding of individual children's emotional reactions about reading in the classroom and how children verbalize their motivation. Children's responses demonstrated that motivation for reading is influenced by the context and task, as well as emotions and perceptions related to the self, others, and the situation (Linnenbrink & Pintrich, 2002b). Although children were diverse in their descriptions and feelings with reading, in many cases, children with similar motivation or achievement responded in the same way to certain reading tasks or situations. Overall, this qualitative approach was valuable in understanding the various influences on motivation and the possible consequences of instructional strategies and classroom practices on children's feelings about themselves as readers, their behaviours in academic contexts, and their overall achievement.

Aside from the advances in motivation theory and research on achievement motivation, these findings can contribute to pedagogy in literacy education. Teachers have a pivotal role in motivating children to read and supporting a positive reading self-image in all children,

regardless of ability. As suggested by the findings of this research, efforts must be made to enhance the literacy experiences of children through providing reading materials that are connected to children's interests and provide a developmentally-appropriate level of challenge, so that children will feel competent. Although it is essential for children to feel positively about their abilities, it is also important that children learn to attribute their successes to their efforts and abilities, rather than external causes. To this effect, educators should also be aware of individual children's beliefs about the causes of their successes and failures with reading, as children with adaptive attributions are likely to have higher motivation and better academic success. Teachers should discuss achievement outcomes with students in order to recognize how children's motivation, emotions experienced during reading, and reasons for their performance may be contributing to their achievement.

The link between motivation and academic achievement is a two-way relationship. Motivation contributes to achievement through children feeling encouraged to read more and read independently at increasing levels of difficulty, which will aid in developing more advanced reading skills. These advanced skills and success with reading will, in turn, contribute to subsequent increases in interest for reading, effort, and feelings of competence. Therefore, a vital component of any literacy education program is recognition of the emotional and cognitive aspects of motivation.

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APPENDIX A

Validation and Initial Reliability of the Post-Passage IMI.

The Intrinsic Motivation Inventory was modified slightly to assess children's situation-specific motivational state after reading a challenging passage. This measure offers a more context-specific measure of motivation after a challenging academic situation, providing information regarding how failure or difficulty may influence a child's perceived competence, interest, and effort in reading. The phrase "the story" was added to the end of each item so that children associated their feelings with the just-read passage. For example, "I put a lot of effort into reading" was modified to "I put a lot of effort into reading the story."

Construct validity was verified with principal component analysis using varimax rotation. Estimation yielded three factors with eigenvalues larger than 1.00 which accounted for 69.37% of the total variance, and corresponded to the three factors in the IMI (Interest, Perceived Competence, and Perceived Effort). The three-factor solution that constituted the construct of the scale is presented in Table 9. All items loaded with a minimum of .40 on at least one of the three factors, with no items cross-loading with the .40 criterion.

The observed internal consistency reliability of the 17-item Post-Passage IMI was high (IMI-R Cronbach's $\alpha = .92$). Internal consistency of the three subscales was high, with Cronbach alpha coefficients ranging from .88 to .92. Table 10 contains the internal consistency, item-total correlations, and descriptive statistics for the complete scale and three subscales. Thus, this situation-specific measure of motivation revealed good internal consistency reliabilities and replicated the factor structure of the subscales in the original IMI (Ryan, 2002). These results support the modification of the IMI to particular domains, as well as situation- or task-specific contexts, without affecting reliability or validity of the measure.

Table 9
Varimax-Rotated Three-Factor Solution of the Post-Passage IMI

	1	2	3
<i>Interest</i>			
Q1 Overall, I enjoyed the story	.87	.17	.21
Q2 The story was fun to read	.79	.13	.28
Q4 I would describe the story as interesting	.83	.13	.17
Q5 I think the story was enjoyable	.86	.11	.21
Q6 After I read the story, I thought about how much I enjoyed it	.72	.17	.21
Q7 I liked reading the story	.82	.28	.23
Q9 If I could choose what to do right now, I would read that story	.59	.14	.15
<i>Perceived Competence</i>			
Q19 I think I was good at reading the story	.23	.73	.26
Q20 I think I read the story well	.16	.75	.32
Q22 I feel good about how well I could read the story	.30	.69	.28
Q23 I was skilled at reading the story	.14	.80	.02
Q39 I could read the story easily	.09	.77	-.11
Q40 I was good at reading the story	.10	.80	.17
<i>Perceived Effort</i>			
Q25 I put a lot of effort into reading the story	.28	.20	.83
Q26 I tried hard to read the story	.33	.12	.80
Q27 I tried hard to read the story well	.21	.15	.80
Q29 I put energy into reading the story	.26	.12	.82
Eigenvalues	7.72	2.42	1.65
% of variance	45.38	14.26	9.72

Note: Factors .40 or greater are bolded.

Table 10
Internal Consistency (Cronbach alpha Coefficient) for the Post-Passage IMI

Subscale	Cronbach's Alpha	Number of Items	Item-Total Correlations	Mean	Standard Deviation
Post-Passage IMI	.92	17	.35-.79	40.83	11.06
Interest	.92	7	.53-.86	18.94	6.11
Perceived Competence	.88	6	.60-.73	13.92	4.13
Perceived Effort	.89	4	.70-.81	7.97	3.34

APPENDIX B

Validation and Initial Reliability of the Hypothetical Situation Attribution Scale.

Weiner's (1986) attributional theory considers the interaction between children's beliefs and thoughts about the causes of their performance, and their actual actions and performance. Although attributions are commonly considered as perceptions of an outcome (Weiner, 1986), it is important to consider attributions as reasonably stable beliefs that children have about the causes of their performance in a particular task or subject-area, such as reading (Seifert, 2004). In accordance with Weiner's (1986) attribution theory, the internal attributions of ability, effort, and interest, and the external attributions of task difficulty, luck, and teacher/researcher unfairness were selected to measure children's attributional orientation for their reading performance in school. Ability and effort are the most common attributions in achievement-related situations (Boekaerts et al., 2003; Weiner, 1986); however, the other causes warrant some concern within the domain of reading. Interest is not a conventionally measured attribution, but has been measured in other attribution scales (see Bar-Tal & Darom, 1979). In terms of the present study and children's classroom reading experiences, interest is a highly relevant potential cause for failure or difficulty with reading. The attributions of ability, effort, and interest also correspond to the three components of motivation measured in this study (perceived competence, perceived effort, and interest).

After establishing the causal attributions to include in the scale based on a review of the literature, items were considered and adjusted from relevant attribution measures, such as the Sydney Attribution Scale (Marsh, Cairns, Relich, Barnes, & Debus, 1984). Existing attribution scales were not used since many do not address reading performance, especially amongst middle school children. Furthermore, due to the subject- and context-specificity of motivational

processes and attributions (Boekaerts et al., 2003; Marsh, Walker, et al., 1991), the attribution measures were designed specific to reading performance. Educational and pedagogical materials were considered when creating the items, including the Ontario Language Curriculum and two documents from Ontario school literacy expert panels (Expert Panel on Literacy in Grades 4 to 6, 2004; Ontario Ministry of Education, 2004) regarding effective reading instruction. These documents, based on current suggestions for effective reading instruction, aided in the development of hypothetical reading situations that corresponded to age-appropriate classroom experiences. The six (three success and three failure) finalized scenarios considered teacher-directed reading activities and student-directed independent reading, as well as both teacher-defined and more subjective definitions of success or failure. The items were constructed using five-point Likert scales (1 = false; 2 = mostly false; 3 = sometimes true, sometimes false; 4 = mostly true; 5 = true). The researcher read a scripted instruction, which also appeared on the computer screen for the child to read along, to outline the task and response categories. Sample items were included to ensure that the directions were clear.

Content, construct, and criterion-related validity were addressed in validating both attribution measures. An extensive review of attribution research and theory, as well as current scales used in attribution research in achievement guided the design process of both scales. Furthermore, three current educational documents and classroom knowledge of students' learning and motivation were considered to design the particular scenarios for the scale, as well as the attribution items relevant to each scenario. Principal component analysis was used to verify construct validity and establish initial evidence for the psychometric quality of the scale. An attempt was made to validate the scale in its entirety. However, due to the complexity of the scale and use of success and failure scenarios, two separate validations were completed.

Varimax rotation was used as it can simplify the factor matrix and interpretability of the factors by minimizing the variables with high loadings on a factor (Hair, Anderson, Tatham, & Black, 1998). Kline (2000) recommends a minimum of 100 participants for a principal components analysis. Although factor loadings of .30 are commonly utilized (Kline, 2000), Hair and colleagues (1998) recommend a criterion of .45 for factor loadings with a sample size between 120 and 150, as 350 participants would be required for significant factor loadings at .30. A more conservative factor loading criteria of .40 was used for the analyses of these measures to balance the recommended criteria and sample size.

Success scenarios. For the success items, the initial estimation yielded four factors with eigenvalues greater than 1.00, which accounted for 60.23% of the total variance. From the examination of each of the varimax-rotated factor solutions, from one to four factors, the three-factor solution was determined to be the most parsimonious and statistically and theoretically acceptable explanation. Item S1Q3 (“The teacher made a mistake”) was deleted as it loaded on Factor 2 at .37, and did not meet the .40 criterion for inclusion, and had a poor item-total correlation with the scale of -.22. The principal components analysis of the remaining 13 items displayed a three factor solution that accounted for 53.34% of the total variance. The three factors that constituted the Hypothetical Situation Attribution Scale for success scenarios are presented in Table 11. These factors correspond to Weiner’s (1986) attributional style classifications along the locus (internal/external) dimension, with internal attributions divided according to stability (stable/unstable).

Factor 1 included five items relating to internal-stable attributions to ability and interest in reading. Factor 2 corresponded to external attributions, with six items relating to task difficulty, teacher unfairness, and luck. The three items loading on Factor 3 were internal-

Table 11
Varimax-Rotated Three-Factor Solution of the Hypothetical Situation Attribution Scale for Success Scenarios

Item	1	2	3
<i>Internal-Stable</i>			
S3 Q4 You always do well on reading tests	.44	.07	.18
S1 Q4 You enjoy reading	.73	-.14	.14
S2 Q2 You are a good reader	.76	-.10	-.12
S1 Q1 You are good at reading	.69	-.13	.29
S2 Q4 You enjoy reading	.70	-.08	.28
<i>External</i>			
S1 Q5 You always read easy stories	-.34	.70	.07
S2 Q3 The story was an easy one	.04	.65	-.09
S3 Q5 The teacher graded it easy	.03	.59	-.22
S3 Q2 The test was easy	.03	.70	-.13
S3 Q1 You were lucky	-.25	.57	.05
<i>Internal-Unstable</i>			
S1 Q2 You work hard at reading	.38	-.04	.76
S3 Q3 You really work hard at reading	.27	-.10	.81
S2 Q1 You tried hard to read well	.02	-.17	.75
Eigenvalue	4.11	1.75	1.41
% of variance	29.33	12.52	10.08

Note: Factors .40 or greater are bolded. S3 Q4 indicates Success Scenario 3, Question 4.

unstable attributions to effort. All other items loaded above .40, with no items cross-loading.

These findings indicated that attributions for success scenarios in reading relate to the internal and external dimensions, and internal attributions were differentiated specific to stability.

The internal consistency reliability of the success items in the Hypothetical Situation Attribution Scale was low with a Cronbach alpha coefficient of .55 for the 13 items. Internal consistency of the three subscales was acceptable, with Cronbach alpha coefficients of .74 for Internal-Stable, .76 for Internal-Unstable, and .67 for External. All item-total correlations were above .30, meeting Kline's (2000) standards for inclusion. Table 12 contains the internal consistency, item-total correlation ranges, and descriptive statistics.

Table 12

Internal Consistency (Cronbach alpha Coefficient) for the Hypothetical Situation Attribution Scale

Subscale	Cronbach's Alpha	Number of Items	Item-Total Correlations	Mean	Standard Deviation
<i>Success Scenarios</i>	.55	13	-.03-.46	43.51	5.38
Internal-Stable	.74	5	.30-.61	19.40	3.67
Internal-Unstable	.76	3	.47-.67	12.07	2.58
External	.67	5	.37-.52	12.04	3.45
<i>Failure Scenarios</i>	.79	13	.22-.59	32.28	8.13
Internal-Stable	.67	4	.37-.60	9.73	3.42
Internal-Unstable	.69	4	.39-.59	10.28	3.56
External	.77	5	.40-.66	12.28	3.90

Failure scenarios. Due to a low item-total correlation of .02, item F3Q2 (“The teacher doesn’t like you”) was deleted from the scale before examining the factor structure. The initial principal components analysis for the remaining 14 failure items generated four factors with eigenvalues greater than 1.00, accounting for 60.08% of the total variance. After examining each of the varimax-rotated factor solutions, from one to four factors, the three-factor solution provided the best overall fit to the data and the most statistically and theoretically meaningful explanation. Item F1Q1 (“You should have read it more carefully”) was deleted, as this item had a maximum factor loading of .31 with Factor 2 and an item-total correlation of .22. The principal components analysis of the remaining 13 items involved three factors that accounted for 55.08% of the total variance.

As shown in Table 13, Factor 1 included five items relating to external attributions to task difficulty and teacher unfairness. Factor 2 corresponded to internal-unstable attributions, with five items relating to effort and interest. Interest loaded on the internal-stable factor in the success scenarios because the items referred to the child’s general and individual interest in reading; however, the interest items in the failure scenarios related to the story or task, and therefore, are an unstable situational internal factor. Factor 3 included four internal-stable items,

Table 13

Varimax-Rotated Three-Factor Solution of the Finalized Hypothetical Situation Attribution Scale for Failure Scenarios

Item	1	2	3
<i>External</i>			
F1 Q4 The teacher picked a story that was too hard	.81	-.12	.16
F1 Q5 The story was too hard	.80	.03	.16
F2 Q5 The story was too difficult	.64	-.01	.24
F3 Q4 You read stories that were too difficult	.61	.17	.24
F2 Q2 The teacher picks hard stories	.60	.20	-.04
<i>Internal-Unstable</i>			
F2 Q3 You weren't trying hard	-.04	.66	.25
F2 Q4 You thought the story was boring	.14	.81	-.03
F1 Q3 You thought the story was boring	-.01	.79	-.08
F3 Q5 You don't enjoy reading	.31	.52	.31
<i>Internal-Stable</i>			
F2 Q1 You are bad at reading aloud	.10	-.12	.69
F3 Q1 You need to try harder at reading	.07	.14	.71
F3 Q3 You always do badly in reading	.37	.17	.68
F1 Q2 You are a poor reader	.44	.19	.56
Eigenvalue	4.05	1.92	1.19
% of variance	31.15	14.75	9.19

Note: Factors .40 or greater are bolded. F1 Q4 indicates Failure Scenario 1, Question 4.

which integrated ability attributions and one effort attribution. This effort attribution (item F3Q1, "You need to try harder at reading") was designed to measure an internal-unstable attribution, but may have loaded on the stable factor because children may have connected a need to try harder to their ability, rather than effort. Item F1Q2 ("You are a poor reader") cross-loaded with Factor 1. All items loaded with a minimum of .45 on at least one of the three factors. These findings replicated those in the success scenarios, with attributions in failure situations relating to the internal and external dimension, and internal attributions divided according to stability.

The internal consistency reliability of the failure items in the Hypothetical Situation Attribution Scale was moderate with a Cronbach alpha coefficient of .79 for the 13 items. Internal consistency of the three subscales was acceptable (External = .77; Internal-Unstable = .69; Internal-Stable = .67). All item-total correlations within each subscale were greater than .30.

Table 12 contains the internal consistency, item-total correlation ranges, and descriptive statistics for the failure scenario items.

Therefore, these results support a three-factor structure of attributional orientation for reading performance, with adequate reliability and validity. Due to the complexity of attributions in success and failure situations, this scale had to be analyzed in two parts, showing the distinctiveness of attributions in different contexts. The factors corresponded to Weiner's (1986) internal/external and stability dimensions and the proposed factor structure. Thus, it appears that internal attributions are more differentiated than external attributions in the domain of reading. In success scenarios, the internal factors were most robust, while the external factor was most robust in the failure scenarios. This corresponds with adaptive attributions in each of these cases (Anderman & Midgley, 1998).

Items for the Hypothetical Attribution Scale

Type	Vignette	Responses
Training Item	Suppose you won a race at the sports fair. It would probably be because:	You were lucky You are a good runner You tried hard to run fast
Training Item	Suppose you painted a picture at school and everyone said it was awful. It would probably be because:	You are a bad painter You only tried a little They did not like you
Training Item	Suppose you made a model and it fell to pieces as soon as you finished it. It would probably be because:	You are not good at making models You did not work carefully on it The glue was bad
Training Item	Suppose you wrote a story that the teacher said was very good. It would probably be because:	You write good stories You tried very hard The teacher likes you
Success S1	Suppose the teacher said that you were one of the best readers in your class. This is probably because:	You are good at reading (A) You work hard at reading (E) The teacher made a mistake (TU) You enjoy reading (I) You always read easy stories (TD)
Success S2	Suppose you chose a story and were able to read it well. It would probably be because:	You tried hard to read well (E) You are a good reader (A) The story was an easy one (TD) You enjoy reading (I)
Success S3	Suppose you got a good grade on a test of how well you understood a story. It is probably because:	You were lucky (L) The test was easy (TD) You really work hard at reading (E) You always do well on reading tests (A) The teacher graded it easy (TU)
Failure F1	Suppose you find it hard to understand a new story you are reading. It is probably because:	You should have read it more carefully (E) You are a poor reader (A) You thought the story was boring (I) The teacher picked a story that was too hard (TU) The story was too hard (TD)
Failure F2	Suppose the teacher asked you to read aloud part of a story for the class and you make a lot of mistakes. It is probably because:	You are bad at reading aloud (A) The teacher picks hard stories (TU) You weren't trying hard (E) You thought the story was boring (I) The story was too difficult (TD)
Failure F3	Suppose your teacher gives you a poor grade for reading. It would probably be because:	You need to try harder at reading (E) The teacher doesn't like you (TU) You always do badly in reading (A) You read stories that are too difficult (TD) You don't enjoy reading (I)

Note: A: ability; E: effort; TD: task difficulty; L: luck; TU: teacher unfairness; I: interest

APPENDIX C

Validation and Initial Reliability of the Post-Passage Attribution Scale.

Children's attributional states after a reading task were examined to measure attributions in a more authentic context. A computerized self-report measure assessed children's attributions for their performance after the challenging reading task, as motivational states are most reliable when recorded immediately after the event that elicited them (Crombach et al., 2003) and children can provide attributions directly after the task is completed (Weiner, 1986). Children responded to the statement, "This was hard to read because..." with 18 different attributional causes for their difficulty with reading, presented one at a time. All items are shown in Table 14. The following are sample attributions for each cause: effort ("because I didn't read it carefully"); ability ("because I am a poor reader"); interest ("because I thought the story was boring"); task difficulty ("because it was a difficult story"); luck ("because I was unlucky"); and researcher unfairness ("because the researcher chose this story by mistake"). Children rated these attributions on the same five-point Likert scale as the Hypothetical Situation Attribution Scale (1 = false to 5 = true).

A principal component analysis was performed to verify construct validity and establish initial evidence for the psychometric quality of the scale. The initial estimation extracted four factors with eigenvalues greater than 1.00 that accounted for 60.89% of the total variance. Comparisons were made between one-, two-, three-, and four-factor varimax-rotated solutions. Examination of the factor models indicated that the data best fit the four-factor solution, with the four factors constituting a theoretically and statistically acceptable and interpretable explanation. The four factors that constituted the Post-Passage Attribution Scale are presented in Table 14.

These factors correspond to Weiner's (1986) attributional style classifications along both the locus (internal/external) and stability (unstable/stable) dimensions.

As shown in Table 14, Factor 1 included internal-unstable attributions of effort and interest in the story. Item 14 ("It is difficult to read without the book") also loaded on this factor. Although this was designed as an external item, the wording may lead children to consider their internal beliefs about their ability to read outside of the context of a book. The ability to read in different contexts would be unstable, so it may be considered as an internal-unstable attribution. Factor 2 contained external-stable attributions, specifically constituting attributions to task difficulty. Item 17 ("The researcher picked a difficult story") loaded on this factor, but was designed as an external-unstable attribution item. However, the wording of the item lends itself to a strong connection with an attribution to task difficulty, as it contains the phrase "a difficult story." Children may have reflected more on this aspect of the item, rather than the action of the researcher. As this item was strongly correlated with the scale and improved reliability, it should be retained and reworded to relate to the difficulty of the story, rather than the choice of the story by the researcher. Factor 3 was loaded by items designed to measure internal-stable attributions of ability and individual interest in reading. Factor 4 included three items connected to the external-unstable attributions of luck and researcher unfairness. Item Q13 ("I was unlucky") cross-loaded on Factor 1 and Factor 4. All items loaded with a minimum of .45 on at least one of the four factors. These findings indicated that the four locus-stability attribution dimensions emerged in the four-factor model for the Post-Passage Attribution scale, but some items cross-loaded due to the interconnectedness of these dimensions and the wording of items.

Table 14

Varimax-Rotated Four-Factor Solution of the Post-Passage Attribution Scale

	1	2	3	4
<i>Internal-Unstable</i>				
Q1 I did not try enough	.67	.12	.28	-.02
Q2 I didn't read it carefully	.61	.11	.29	-.03
Q3 I didn't put a lot of energy into reading the story	.70	.12	.26	-.09
Q7 I didn't like the story	.76	-.06	.07	.26
Q8 I thought the story was boring	.79	.08	.07	.21
Q14 It is difficult to read without the book	.46	.16	.25	.31
<i>External-Stable</i>				
Q10 It was a difficult story	-.01	.80	.18	-.04
Q11 The story was too challenging	.01	.80	.22	.11
Q12 The words were tricky	.13	.81	.19	-.06
Q17 The researcher picked a difficult story	.11	.72	.04	.36
Q18 The story was for someone older than me	.19	.78	-.10	.08
<i>Internal-Stable</i>				
Q4 I am not good at reading	.15	.19	.83	.17
Q5 I am a poor reader	.17	.10	.84	.13
Q6 I am bad at reading aloud	.25	.21	.68	-.07
Q9 I don't like to read	.39	-.01	.65	.04
<i>External-Unstable</i>				
Q13 I was unlucky	.46	.08	-.03	.51
Q15 The researcher chose this story by mistake	-.00	-.01	.24	.71
Q16 The researcher was being unfair	.10	.15	-.05	.71
Eigenvalue	5.51	2.53	1.67	1.25
% of variance	30.59	14.07	9.29	6.93

Note: Factors .40 or greater are bolded.

Internal consistency reliability of the Post-Passage Attribution Scale was high with a Cronbach alpha coefficient of .86 for the 18 items. Internal consistency of three of the four subscales was high, with Cronbach alpha coefficients ranging from .81 to .86. However, the External-Unstable subscale had a Cronbach alpha coefficient of .51. The three items of this subscale were deleted due to one item (Q13 "I was unlucky") cross-loading in the analysis, and the other two items (Q15 "Researcher chose the story by mistake" and Q16 "Researcher was being unfair") having item-total correlations with the entire scale of .25. Kline (2000) suggests a minimum item-total correlation of .30 for inclusion. After deletion, the Cronbach alpha for the

15-item scale remained at .86 and all item-total correlation coefficients were greater than .30, supporting the view that the elimination of these three items did not affect the reliability of the scale. Table 15 contains the principal components analysis for the final 15 item scale, involving three factors that accounted for 61.21% of the variance. Table 16 displays the internal consistency, item-total correlation ranges, and descriptive statistics for the finalized scale.

Table 15
Varimax-Rotated Three-Factor Solution of the Finalized Post-Passage Attribution Scale

Item	1	2	3
<i>External-Stable</i>			
Q10 It was a difficult story	.79	-.02	.18
Q11 The story was too challenging	.81	.01	.23
Q12 The words were tricky	.79	.11	.20
Q17 The researcher picked a difficult story	.75	.17	.04
Q18 The story was for someone older than me	.79	.19	-.08
<i>Internal-Unstable</i>			
Q1 I did not try enough	.10	.58	.34
Q2 I didn't read it carefully	.10	.58	.30
Q3 I didn't put a lot of energy into reading the story	.10	.66	.29
Q7 I didn't like the story	-.03	.84	.04
Q8 I thought the story was boring	.11	.85	.05
Q14 It is difficult to read without the book	.20	.52	.24
<i>Internal-Stable</i>			
Q4 I am not good at reading	.20	.17	.83
Q5 I am a poor reader	.10	.19	.84
Q6 I am bad at reading aloud	.19	.20	.70
Q9 I don't like to read	-.01	.39	.66
Eigenvalue	5.21	2.50	1.46
% of variance	34.74	16.70	9.76

Note: Factors .40 or greater are bolded.

Table 16
Internal Consistency (Cronbach alpha Coefficient) for the Post-Passage Attributions Scale

Subscale	Cronbach's Alpha	Number of Items	Item-Total Correlations	Mean	Standard Deviation
Post-Passage Attributions Scale	.86	15	.42-.59	34.57	10.40
Internal-Stable	.82	4	.56-.73	8.54	3.85
Internal-Unstable	.81	6	.46-.68	13.09	5.17
External-Stable	.86	5	.63-.72	12.94	4.68

As shown, the three-factor structure of attributional states in a situation-specific failure reading task was compatible with Weiner's (1986) dimensions. This scale had superior reliability in comparison to the Hypothetical Situation Attribution Scale, displaying the enhanced interpretability and salience of attributions after a particular task. It is possible that attributions can be measured more accurately as a state in connection with a specific context.

The limitations of the validation of these measures include a small sample size and age range, especially since a smaller sample size can lead to inaccurate factor structures and cross-loadings, which can be due to sampling error or poor item construction. As this was the initial study using these measures, the results need to be replicated with other populations to determine their generalizability. The revised scales should also be piloted in future studies with larger sample sizes to confirm the factor structure and reliability of these measures.